HTC-W555

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Chinese Model
Tourist Model

HTC-W555 is the deck and CD section in MHC-W555/W777.

This stereo system is equipped with the Dolby B-type noise reduction system and Dolby Pro Logic Surround decoder*.
* Manufactured under license from Dolby Laboratories Licensing Corporation.
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CD SECTION	Model Name Using Similar Mechanism	HCD-H991AV
	CD Mechanism Type	CDM38-5BD29A
	Base Unit Type	BU-5BD29AL
	Optical Pick-up Type	KSS-213B/S-N
TAPE DECK SECTION	Model Name Using Similar Mechanism	NEW
	Tape Transport Mechanism Type	TCM-230AWR1

SPECIFICATIONS

CD player section

System	Compact disc and digital audio system
Laser	Semiconductor laser (λ=780nm) Emission duration: continuous
Laser output	Max. 44.6 μW* *This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.
Frequency response	20 Hz – 20 kHz (±1 dB)
Wavelength	780 – 790 nm
Signal-to-noise ratio	More than 90 dB
Dynamic range	More than 90 dB
CD OPTICAL DIGITAL OUT (Square optical connector jack, rear panel)	
Wavelength	600 nm
Output Level	–18 dBm

Tape player section

Recording system	4-track 2-channel stereo
Frequency response (DOLBY NR OFF)	40 – 13,000 Hz (±3 dB), using Sony TYPE I cassette 40 – 14,000 Hz (±3 dB), using Sony TYPE II cassette

General

Dimensions (w/h/d)	Approx. 288 x 205 x 360 mm
Mass	Approx. 4.4 kg

Design and specifications are subject to change without notice.

COMPACT DISC DECK

MICROFILM

SONY®

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement

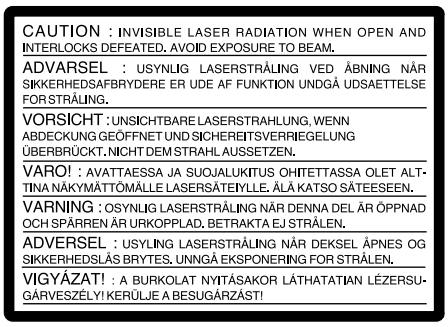
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.



The following caution label is located inside of the unit.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the “S curve check” in “CD section adjustment” and check that the S curve waveform is output three times.

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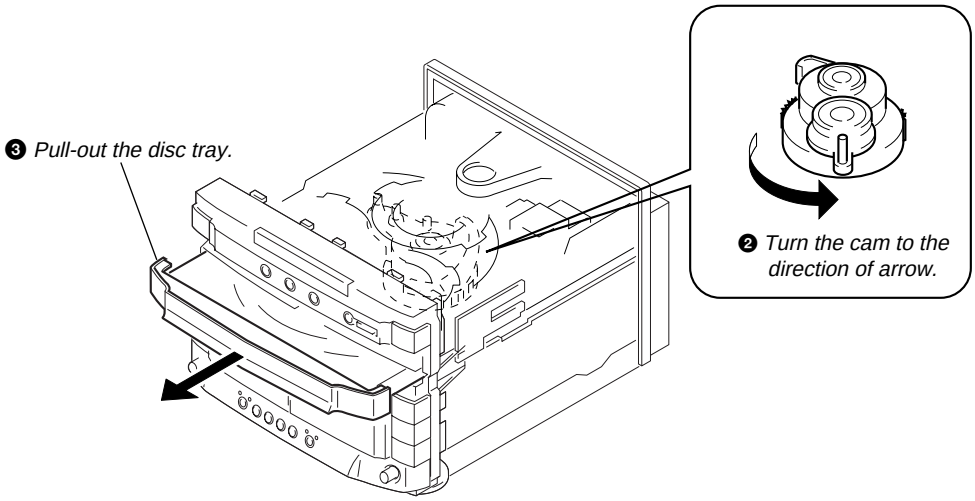
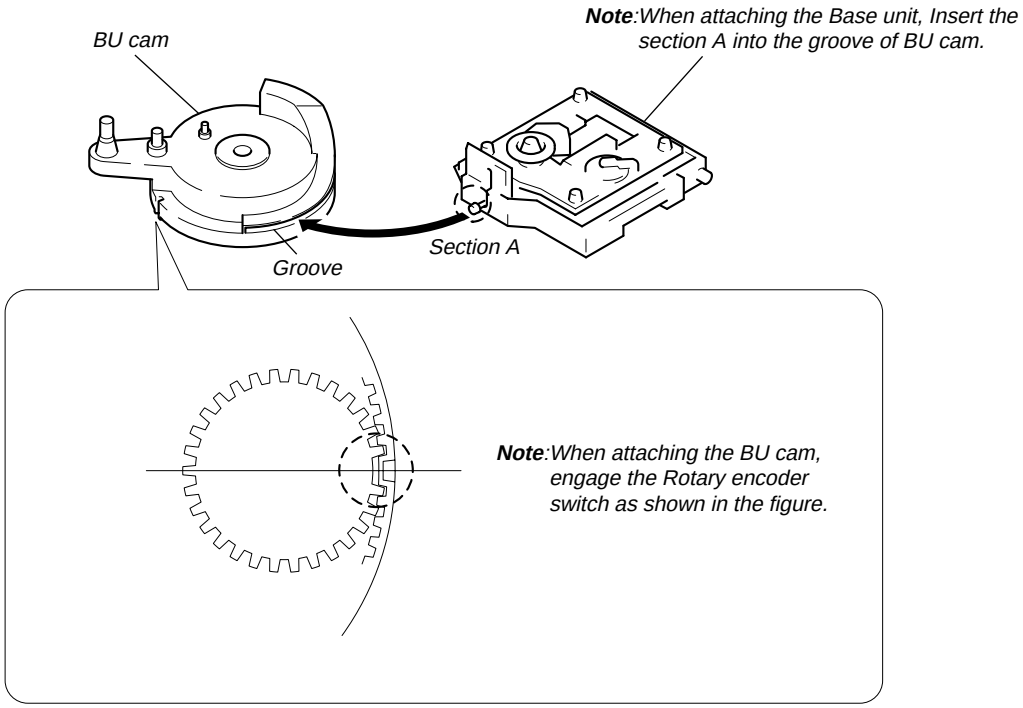
SECTION 1
SERVICING NOTE

HOW TO OPEN THE DISC TRAY WHEN POWER SWITCH TURNS OFF

❶ *Remove the Case.*



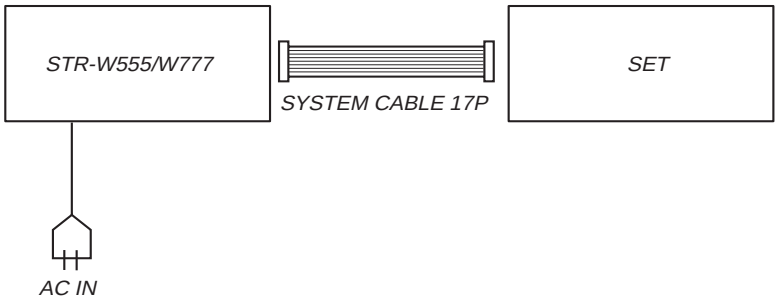
Note for Installation (ROTARY ENCODER)



Connection and Operations of the Unit by Itself

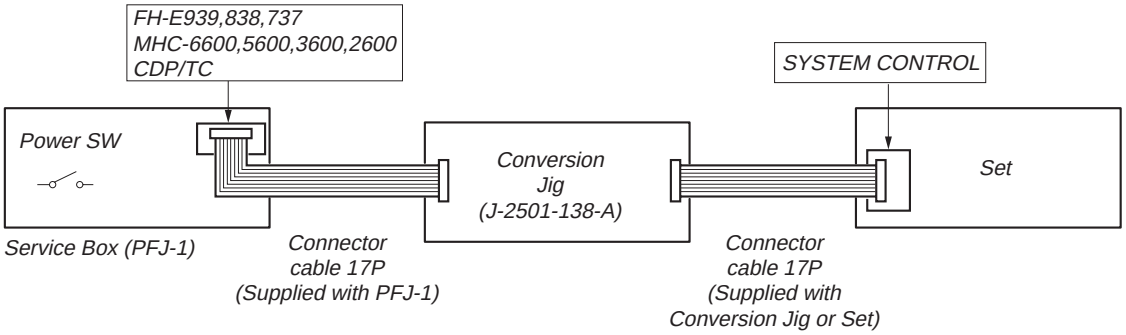
This unit cannot be operated by itself as it does not come with a power supply.
Connect STR-W555/W777 as shown in “Connection 1” before beginning servicing.

Connection 1: If there is STR-W555/W777.



Use a power supply jig (PFJ-1) if the STR-W555/W777 is not available.
Connect the conversion jig for connection (J-2501-138-A) as shown in “Connection 2” before beginning servicing.

Connection 2: If there is not STR-W555/W777.



To operate the unit by itself, turn on the power of the conduction jig (PFJ-1), and press the ☐ (TAPE A), ☐ (TAPE B), and ▷ (TAPE B) buttons together in this order.

As this unit is not equipped with fast forward and rewind buttons, buttons need to be combined and pressed together for different functions when operating the unit by itself. (See Table-2.)
However, it will not operate properly if operations are performed without switching the functions.
Perform the following procedure to switch the functions before operating the unit.
The function selected is indicated by the DISC NUMBER indicator.

Table 1 Switching the Functions

Function	Operation	Indicator
CD	■ (CD) button + HI-SPEED DUBBING button	①○②○③
TAPE A	■ (CD) button + ● REC button	①○② ③
TAPE B	■ (CD) button + ◁ (TAPE A) button	① ②○③

Table 2 Pressing Combination of Buttons When Operated by Itself

Deck	Function	Operation
CD	▶▶I (AMS)	☐ (TAPE B) button + DISC3 button
	I◀◀ (AMS)	☐ (TAPE B) button + DISC1 button
	▶▶	☐ (TAPE A) button + DISC3 button
	◀◀	☐ (TAPE A) button + DISC1 button
TAPE A TAPE B	▶▶I (AMS)	DISC SKIP button + ▷ (TAPE B)
	I◀◀ (AMS)	DISC SKIP button + ◁ (TAPE B)
	▶▶	DISC SKIP button + ▷ (TAPE A)
	◀◀	DISC SKIP button + ◁ (TAPE A)

The function can be differentiated by the lighting of this part of the indicator.

↓ ↓
①○②○③

Cold Reset

NOTE: This is the mode for operating the unit by itself. Take note that the operating method differs when connected to the STR-W555/W777. This method is described in the manuals of the STR-W555 and STR-W777. Refer to these manuals for details.

This mode is used for initializing the RAM contents. Perform this mode when returning the repaired product to the customer.

Precedure:

1. After turning ON the power of the conduction jig (PFJ-1), press the ☐ (TAPE A) button, ☐ (TAPE B) button, and ▷ (TAPE B) button together in this order.
2. Press the ❚❚ (TAPE) button while pressing the ■ (CD) button.

CD Delivery Mode

NOTE: This is the mode for operating the unit by itself. Take note that the operating method differs when connected to the STR-W555/W777. This method is described in the manuals of the STR-W555 and STR-W777. Refer to these manuals for details.
This mode moves the pickup to areas where the anti-vibration is stronger. Perform this mode when retuming the repaired product to the customer.

Precedure:

1. After turning ON the power of the conduction jig (PFJ-1), press the ☐ (TAPE A) button, ☐ (TAPE B) button, and ▷ (TAPE B) button together in this order.
2. Press the CD SYNCHRO button while pressing the ■ (CD) button.
3. Wait untill ● (TAPE B) indicator is on befor disconnect from the conduction jig (PFJ-1).

LED All Lit Mode

NOTE: Always perform this mode when operating the unit by itself.
This mode is used for lighting up the whole LED.

Precedure:

1. After turning ON the power of the conduction jig (PFJ-1), press the ☐ (TAPE A) button, ☐ (TAPE B) button, and ▷ (TAPE B) button together in this order.
2. The whole LED can be turned on and off each time the ☐ (TAPE A) button is pressed while pressing the ■ (CD) button.
3. Press the three buttons in step 1 at the end.

Key Check Mode

NOTE: Always perform this mode when operating the unit by itself.
This mode is used for checking the key inputs of the buttons of the unit.

Precedure:

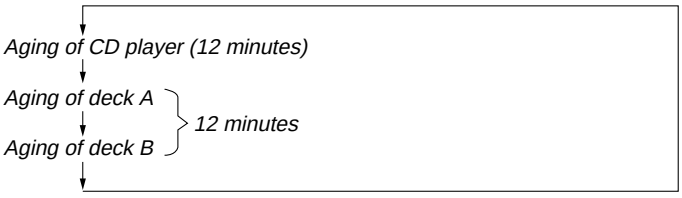
1. After turning ON the power of the conduction jig (PFJ-1), press the ☐ (TAPE A) button, ☐ (TAPE B) button, and ▷ (TAPE B) button together in this order.
2. Press the DOLBY NR button while pressing the ■ (CD) button to set the key check mode, and the indicator displays " ③ ▷❚❚".
3. The number of buttons pressed are indicated in binary digits by the indicator LED. Buttons pressed once are not counted when pressed again.
4. Press the two buttons in step 2 at the end.

Display: ①○②○③
MSB ↑ ↑ LSB

Aging Mode

NOTE: Perform the following procedure only when operating the unit by itself.
This mode is used for checking the operations of the CD player and tape deck.
The operations are the same as the aging mode described in the service manual for the STR-W555/W777. However as this unit does not have a fluorescent indicator tube, operating states and error statuses cannot be checked.
If the STR-W555/W777 is available, set the aging mode according to those service manuals.

Aging continues in the following sequence as long as no errors occur.

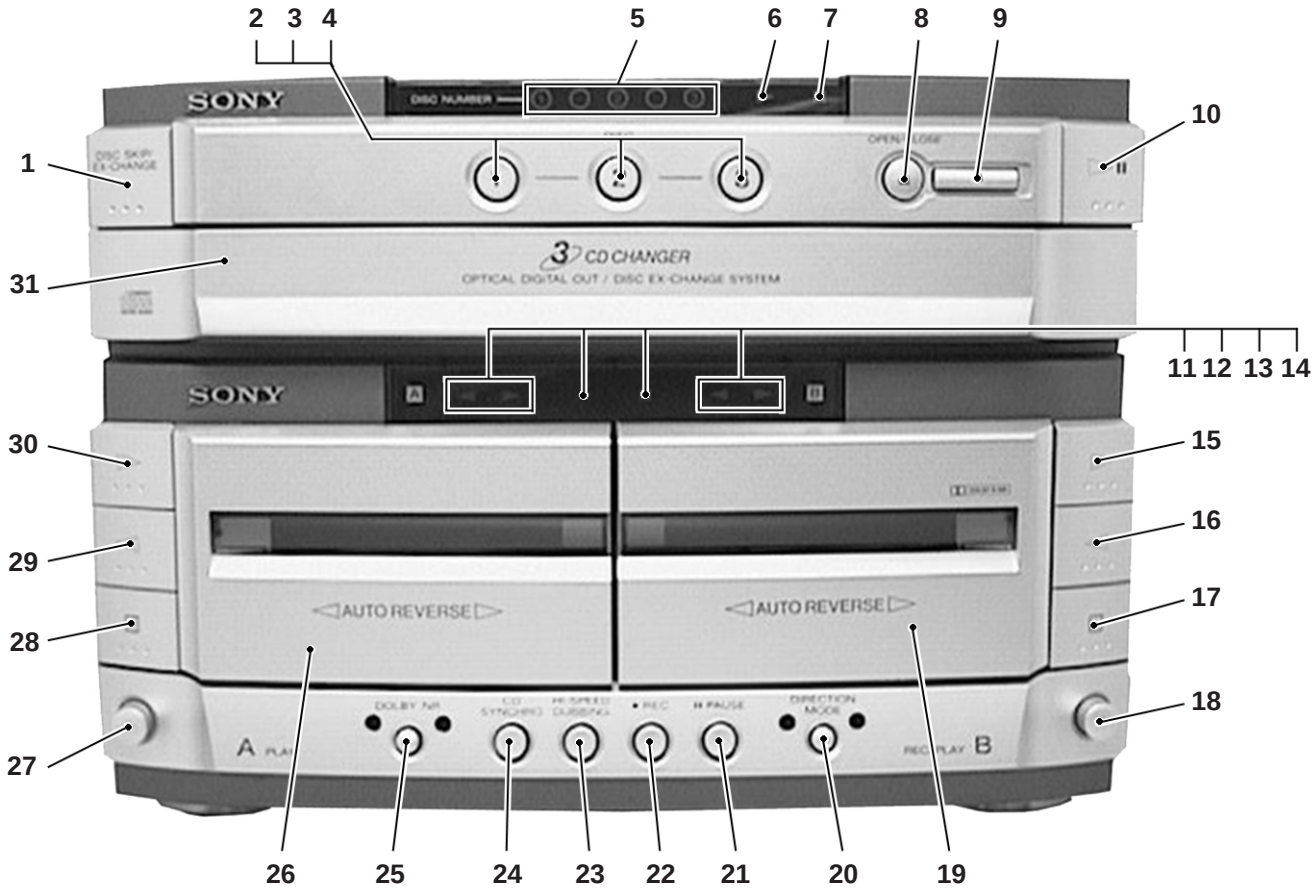


Precedure:

1. After turning ON the power of the conduction jig (PFJ-1), press the ☐ (TAPE A) button, ☐ (TAPE B) button, and ▷ (TAPE B) button together in this order.
2. Press the ☐ (TAPE B) button while pressing the ■ (CD) button to set the aging mode and start aging.
3. To end aging, press the three buttons in step 1.

SECTION 2
GENERAL

Front Panel



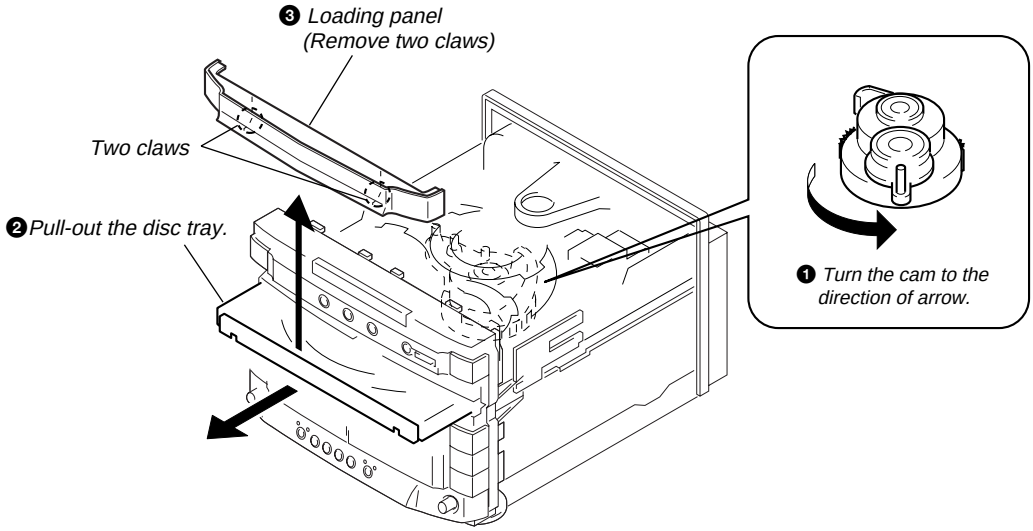
LOCATION OF PARTS AND CONTROLS

1 DISC SKIP/EX-CHANGE button
2 DISC 1 button
3 DISC 2 button
4 DISC 4 button
5 DISC NUMBER ①◯②◯③ indicator
6 ► (CD play) indicator
7 ❚❚ (CD pause) indicator
8 ⏏ OPEN/CLOSE button
9 ■ (CD stop) button
10 ▷❚❚ (CD play pause) button
11 ◄► (Deck A play) indicator
12 ● (Deck B rec) indicator
13 ❚❚ (Tape (Deck B pause)) indicator
14 ◄► (Deck B play) indicator
15 ▷ (Deck B play) button
16 ◁ (Deck B play) button
17 ☐ (Deck B stop) button
18 ⏏ (Deck B eject) button
19 Casette lid (Deck B)
20 DIRECTION MODE button
21 ❚❚ PAUSE button
22 ● REC button
23 HI-SPEED DUBBING button
24 CD SYNCHIRO button
25 DOLBY NR button
26 Casette lid (Deck A)
27 ⏏ EJECT (Deck A) button
28 ☐ (Deck A stop) button
29 ◁ (Deck A play) button
30 ▷ (Deck A play) button
31 CD Disc tray

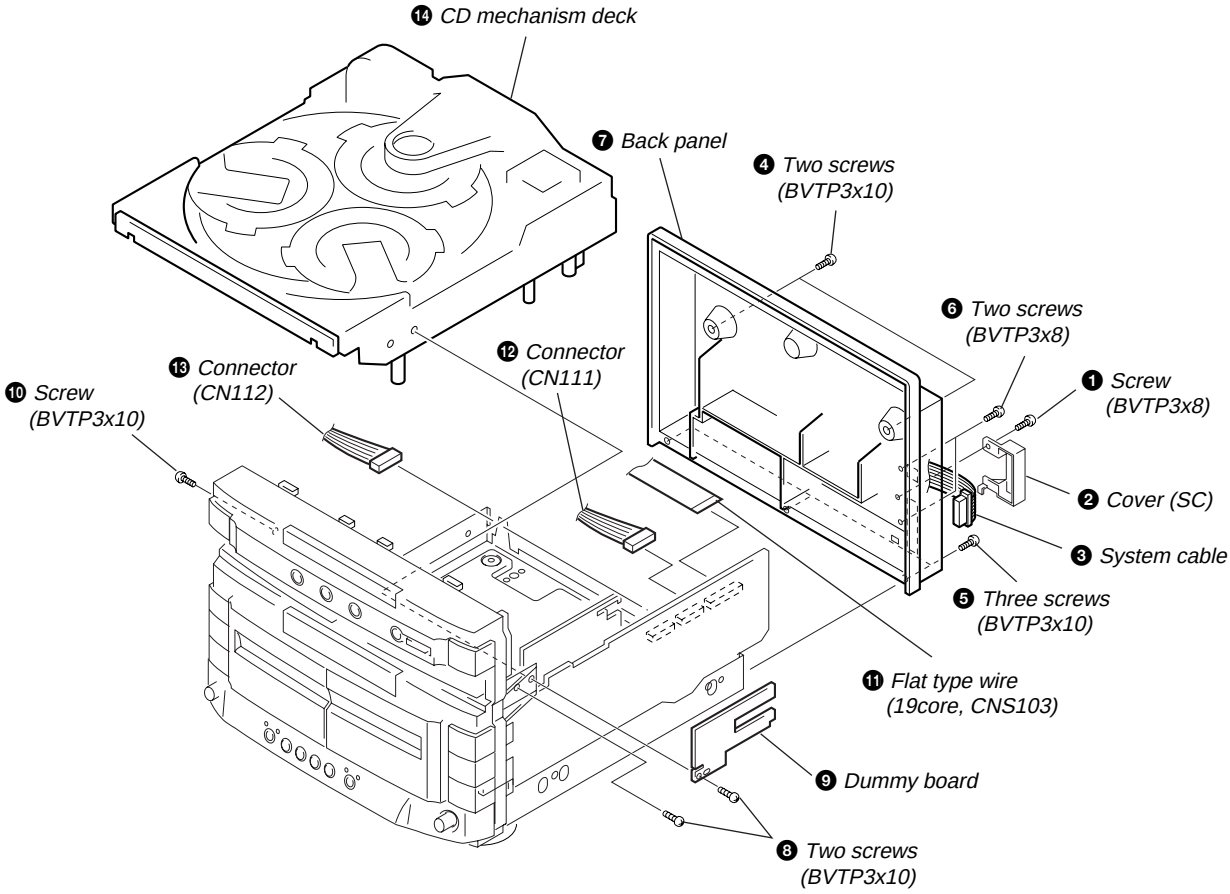
SECTION 3
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

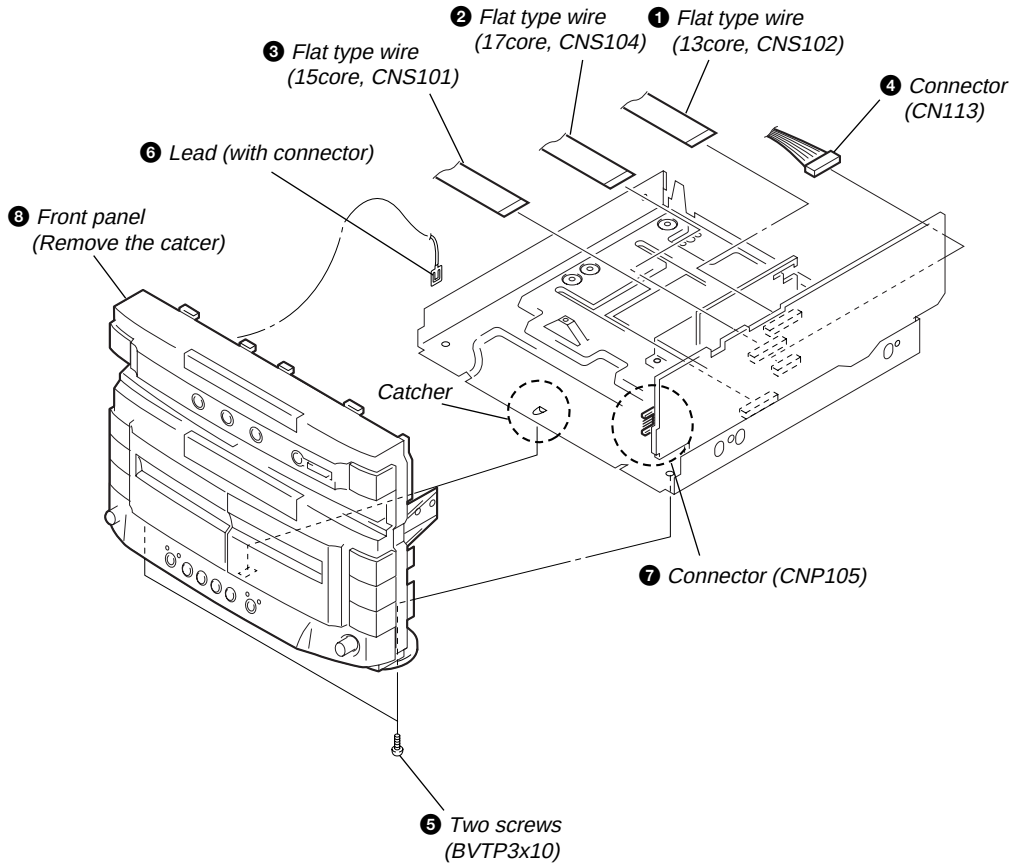
3-1. LOADING PANEL



3-2. BACK PANEL AND CD MECHANISM DECK



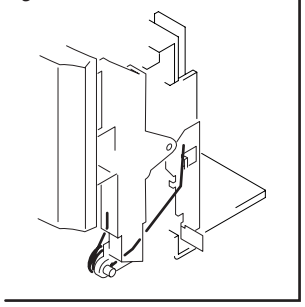
3-3. FRONT PANEL

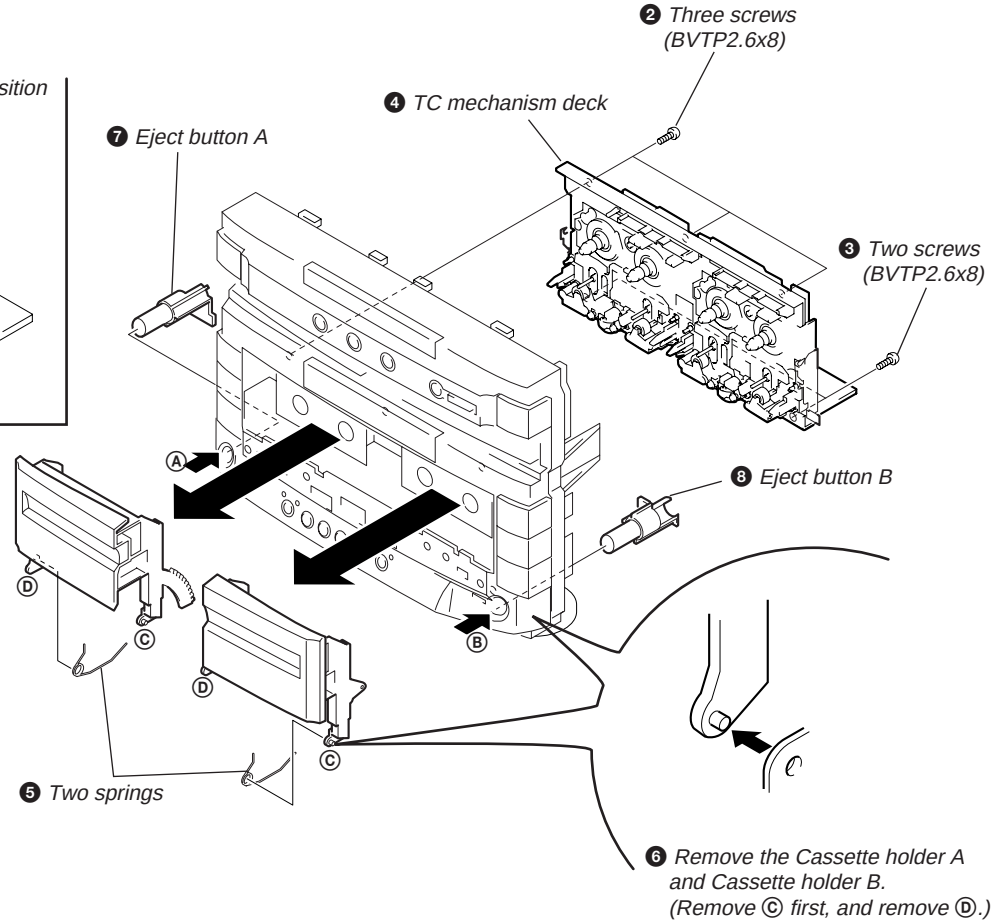


3-4. TC MECHANISM DECK AND CASSETTE HOLDER

❶ *Push the ⏏ buttons.*
(Arrow Ⓐ and arrow Ⓑ.)

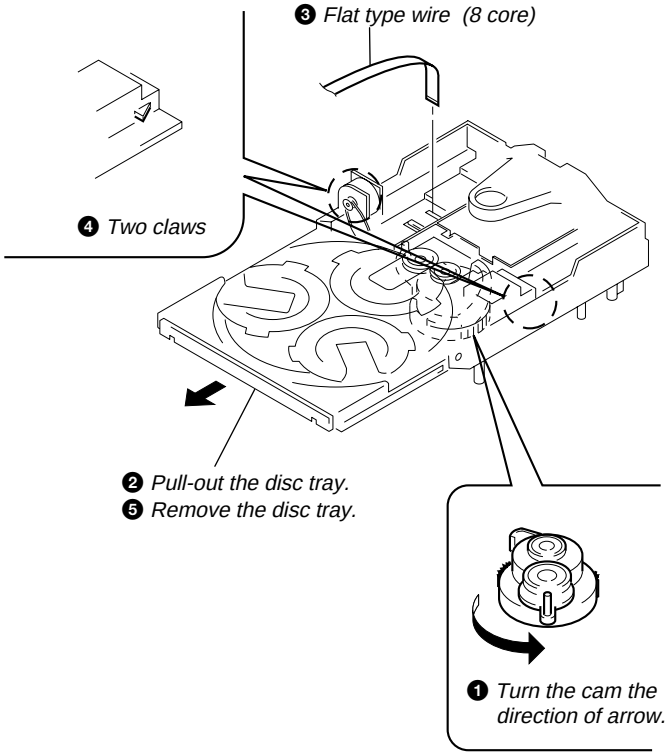
Note for installation
Set the Spring to be at the position in the figure.

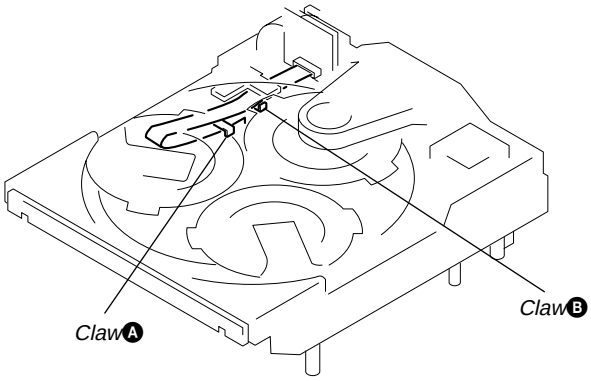




3-5. DISC TRAY

Note: *When installing the Disc tray, pull around the flat type wire to pass through the claw A and claw B, as shown in the figure.*





SECTION 4
MECHANICAL ADJUSTMENTS

Precaution

1. Clean the following parts with a denatured alcohol-moistened swab:
   - record/playback heads
   - erase head
   - capstan
   - pinch rollers
   - rubber belts
   - idlers
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	31 to 71 g • cm (0.43 – 0.98 oz • inch)
FWD back tension	CQ-102C	2 to 6 g • cm (0.02 – 0.08 oz • inch)
REV	CQ-102RC	31 to 71 g • cm (0.43 – 0.98 oz • inch)
REV back tension	CQ-102RC	2 to 6 g • cm (0.02 – 0.08 oz • inch)
FF/REW	CQ-201B	71 to 143 g • cm (0.98 – 1.99 oz • inch)
FWD tension	CQ-403A	100 g or more (3.53 oz or more)
REV tension	CQ-403R	100 g or more (3.53 oz or more)

SECTION 5
ELECTRICAL ADJUSTMENTS

Read before adjustments

To adjust the unit, operate the unit by itself using the conduction jig (PFJ-1).

For details on switching functions and fast forwarding the unit, etc. when operating it by itself, refer to “Connection and Operations of the Unit by Itself” on page 5 of Servicing Notes.

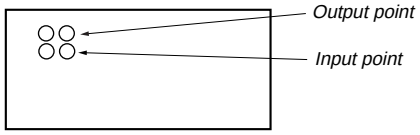
• Turning on the power

When operating the unit by itself:

1. After turning ON the power of the conduction tool (PFJ-1), press the ☐ (TAPE A) button, ☐ (TAPE B) button, and ▷ (TAPE B) button together in this order.

Inputting/outputting audio signals:

Use the jack of the power supply jig (PFJ-1).



PFJ-1

DECK SECTION **0 dB=0.775V**

1. Demagnetize the record/playback head with a head damagnetizer.
2. Do not use a magnetized screwdriver for the adjustments.
3. After the adjustments, apply suitable locking compound to the parts adjusted.
4. The adjustments should be performed with the rated power supply voltage unless otherwise noted.
5. The adjustments should be performed in the order given in this service manual. (As a general rule, playback circuit adjustment should be completed before performing recording circuit adjustment.)
6. The adjustments should be performed for both L-CH and R-CH.
7. Switches and controls should be set as follows unless otherwise specified.

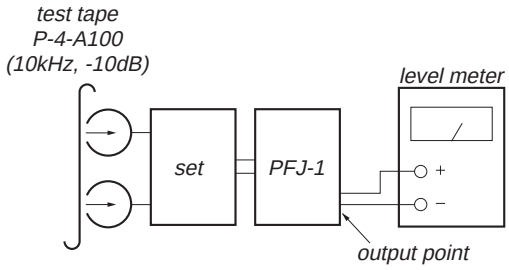
Tape	Signal	Used for
P-4-A100	10 kHz, –10 dB	Azimuth Adjustment
WS-48B	3 kHz, 0 dB	Tape Speed Adjustment
P-4-L300	315 Hz, 0 dB	Level Adjustment

Record/Playback Head Azimuth Adjustment (Deck A, Deck B)

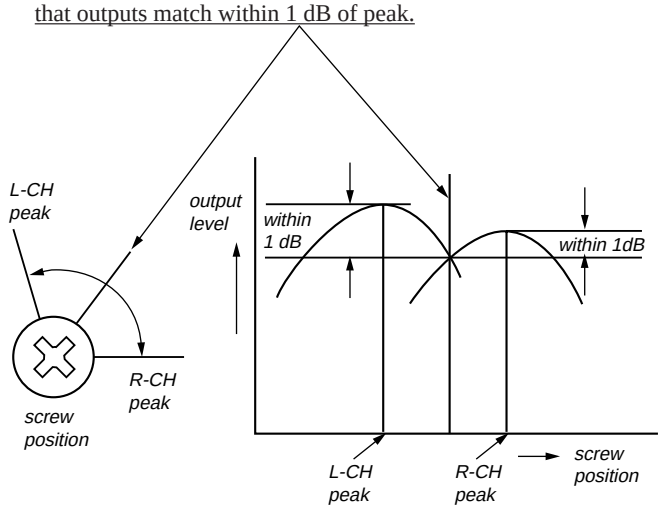
Note: Perform this adjustments for both decks.

Procedure:

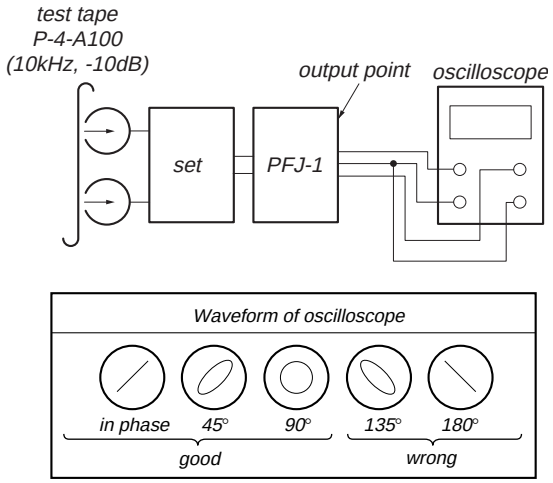
1. Mode : Playback



2. Turn the adjustment screw and check output peaks. If the peaks do not match for L-CH and R-CH, turn the adjustment screw so that outputs match within 1 dB of peak.

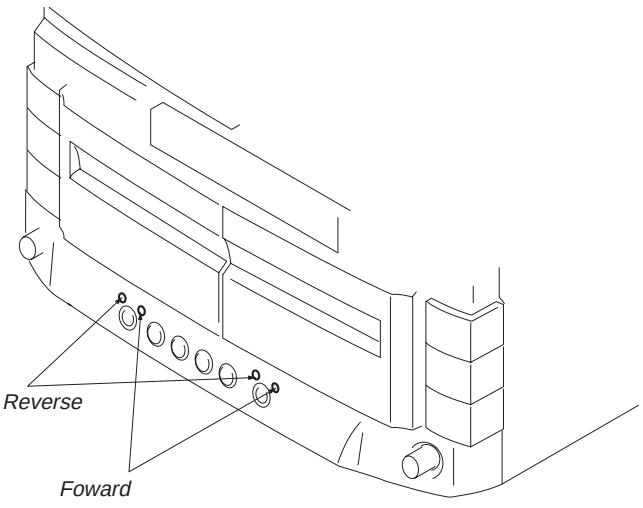


3. Mode: Playback



4. After the adjustments, apply suitable locking compound to the parts adjusted.

Adjustment Location: Playback Head (Deck A)
Record/Playback/Erase Head (Deck B)



Tape Speed Adjustment (Deck B)

Note: Set the test mode using the following method and begin tape speed adjustment.
In the test mode, the speed will switch to double speed or normal speed each time the HI-DUB button is pressed.

Procedure:
Press the ■ (CD) button while pressing the DIRECTION MODE button.

1. Insert the WS-48B into deck B, while pressing the ■ (CD) button, press the ◁ (TAPE A) button, set the function to "deck B".
2. Press the ▷ button of deck B.
3. Press the HI-DUB button and play the tape at double speed.
4. Adjust RV1001 of the LEAF SW board so that the reading of the frequency counter becomes 6000 ± 180 Hz.
5. Press the HI-DUB button and play the tape at normal speed.
6. Adjust RV1002 of the LEAF SW board so that the reading of the frequency counter becomes 3000 ± 90 Hz.

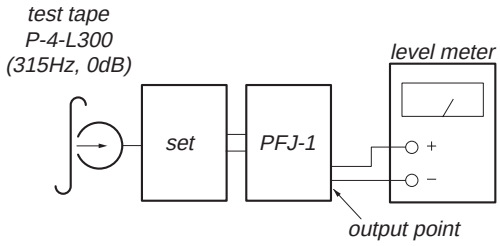
Adjustment Location: LEAF SW board

Sample Value of Wow and flutter

W.RMS (JIS) less than 0.3%
(test tape: WS-48B)

Playback Level Adjustment (Deck A, Deck B)

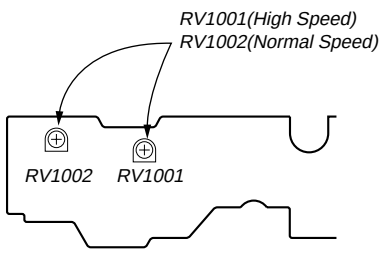
Procedure:
Mode: Playback



Deck A is RV311 (L-CH) and RV411 (R-CH), deck B is RV301 (L-CH) and RV401 (R-CH)
so that adjustment within the following adjustment level.

Adjustment level:
Output point from PFJ-1 playback level: 301.5 to 338.3 mV (–8.2 to –7.2 dB)
level difference between the channels: within ± 0.5 dB
Adjustment Location: AUDIO board

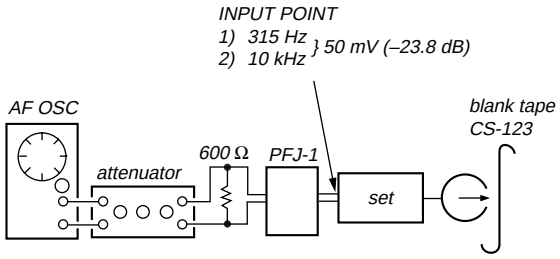
Adjustment Location [LEAF SW BOARD]



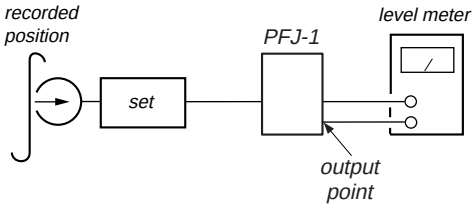
Record Bias Adjustment (Deck B)

Procedure:

1. Press the [■ (CD)] button while pressing the [DIRECTION MODE] button.
2. While pressing the [■ (CD)] button, press the [◁ (TAPE A)] button, set the function to "deck B".
3. Insert a tape into deck B, press the [● REC] button, and then press the [►] button to start recording.
4. Mode: Record



5. Mode: Playback



6. Confirm playback the signal recorded in step 2 become adjustment level as follows.
   If these levels do not adjustment level, adjust the RV341 (L-CH) and RV441 (R-CH) on the AUDIO board to repeat steps 3 and 4.

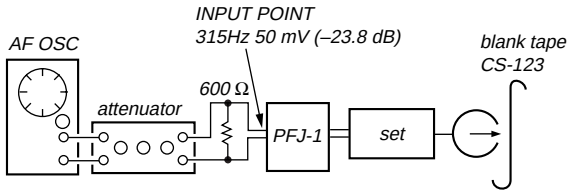
Adjustment level: The playback output of 10 kHz level difference against 315 Hz reference should be ± 1.0 dB.

Adjustment Location: AUDIO board

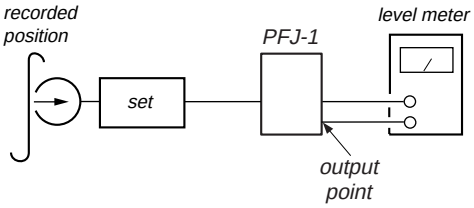
Record Level Adjustment (Deck B)

Procedure:

1. Press the [■ (CD)] button while pressing the [DIRECTION MODE] button.
2. While pressing the [■ (CD)] button, press the [◁ (TAPE A)] button, set the function to "deck B".
3. Insert a tape into deck B, press the [● REC] button, and then press the [►] button to start recording.
4. Mode: Record



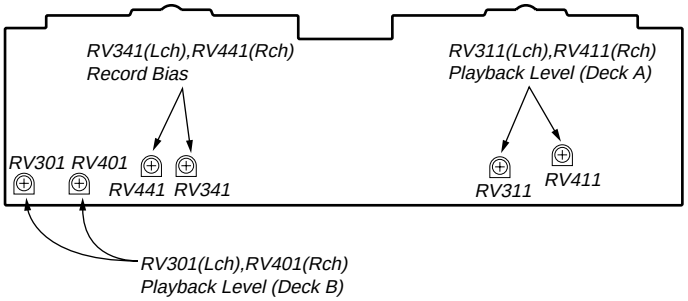
5. Mode: Playback



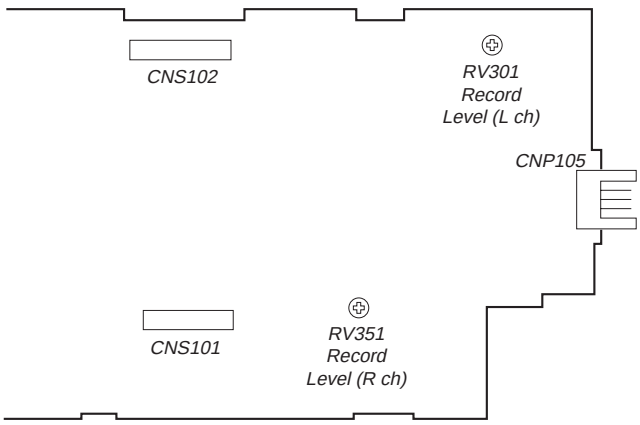
6. Confirm playback the signal recorded in step 2 become adjustment level as follows.
   If these levels do not adjustment level, adjust the RV301 (L-CH) and RV351 (R-CH) on the MAIN board to repeat steps 3 and 4.

Adjustment level:
Output point from PFJ-1 playback level: 47.2 to 53.0 mV (–24.3 to –23.3 dB)

Adjustment Location: MAIN board
Adjustment Location:



[AUDIO BOARD] (Conductor Side)
[MAIN BOARD] (Component Side)

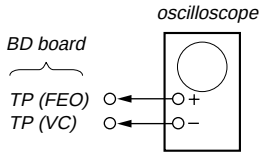


CD SECTION

Note:

1. CD Block is basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

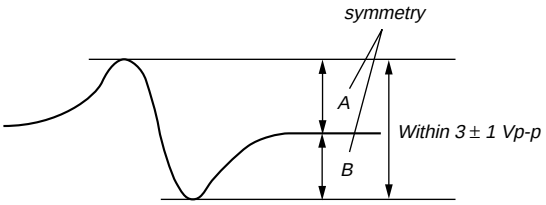
S Curve Check



Procedure :

1. Connect oscilloscope to test point TP (FEO).
2. Connect between test point TP (FOK) and Ground by lead wire.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and turned Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1Vp-p.

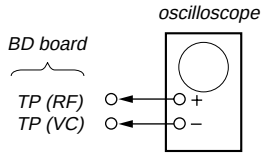
S-curve waveform



6. After check, remove the lead wire connected in step 2.

Note: • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

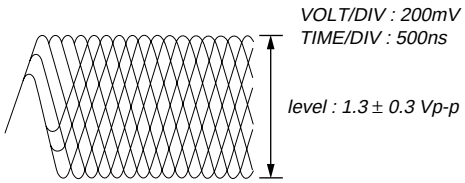


Procedure :

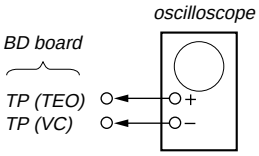
1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turned Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note: Clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.

RF signal waveform



E-F Balance (1 Track Jump) check

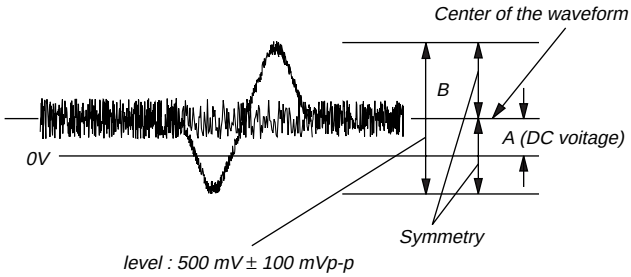


Procedure:

1. Connect oscilloscope to test point TP (TEO) on BD board.
2. Turned Power switch on.
3. Put disc (YEDS-18) in to play the number five track.
4. Press the "❚❚ (Pause)" button.
5. Check the level B of the oscilloscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following:

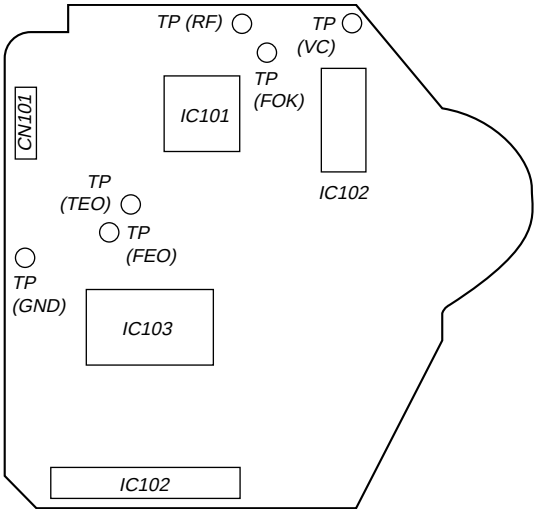
   • A/B x 100 = less then ± 7 (%)
   • B = 500 ± 100 mVp-p

1 track jump waveform



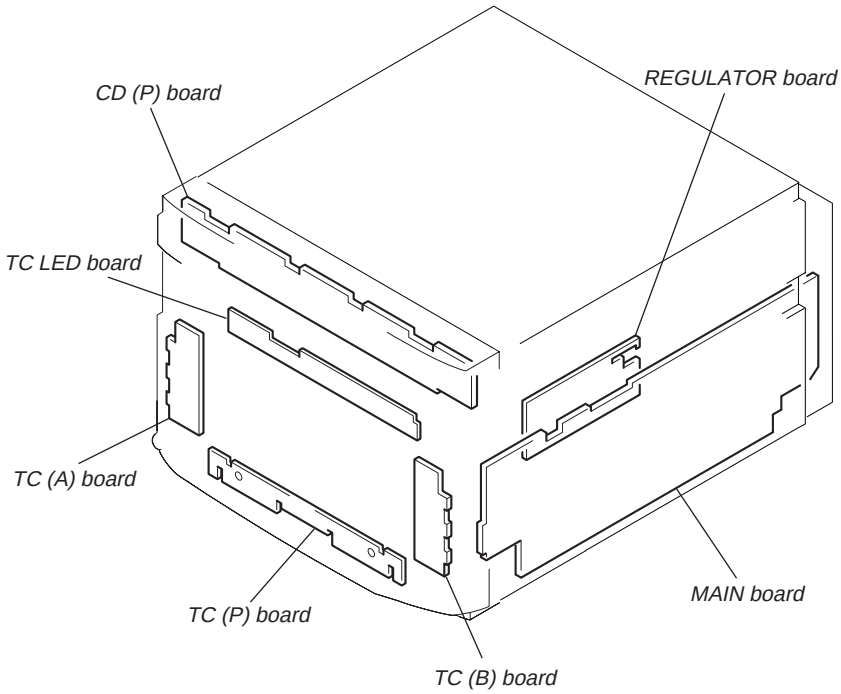
Adjustment Location:

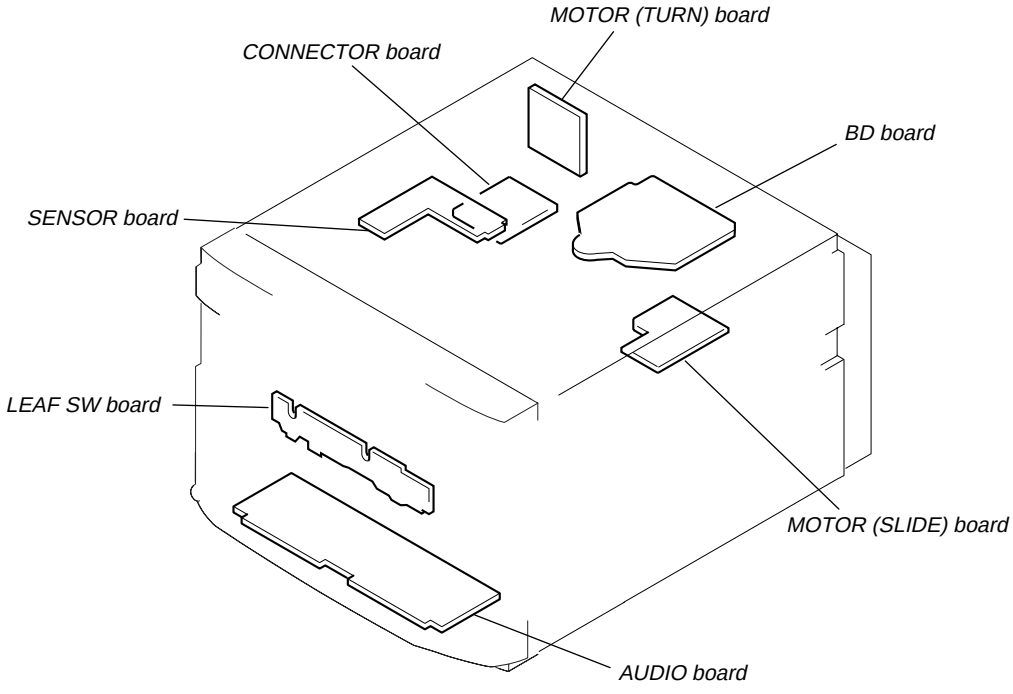
[BD BOARD] (Conductor Side)



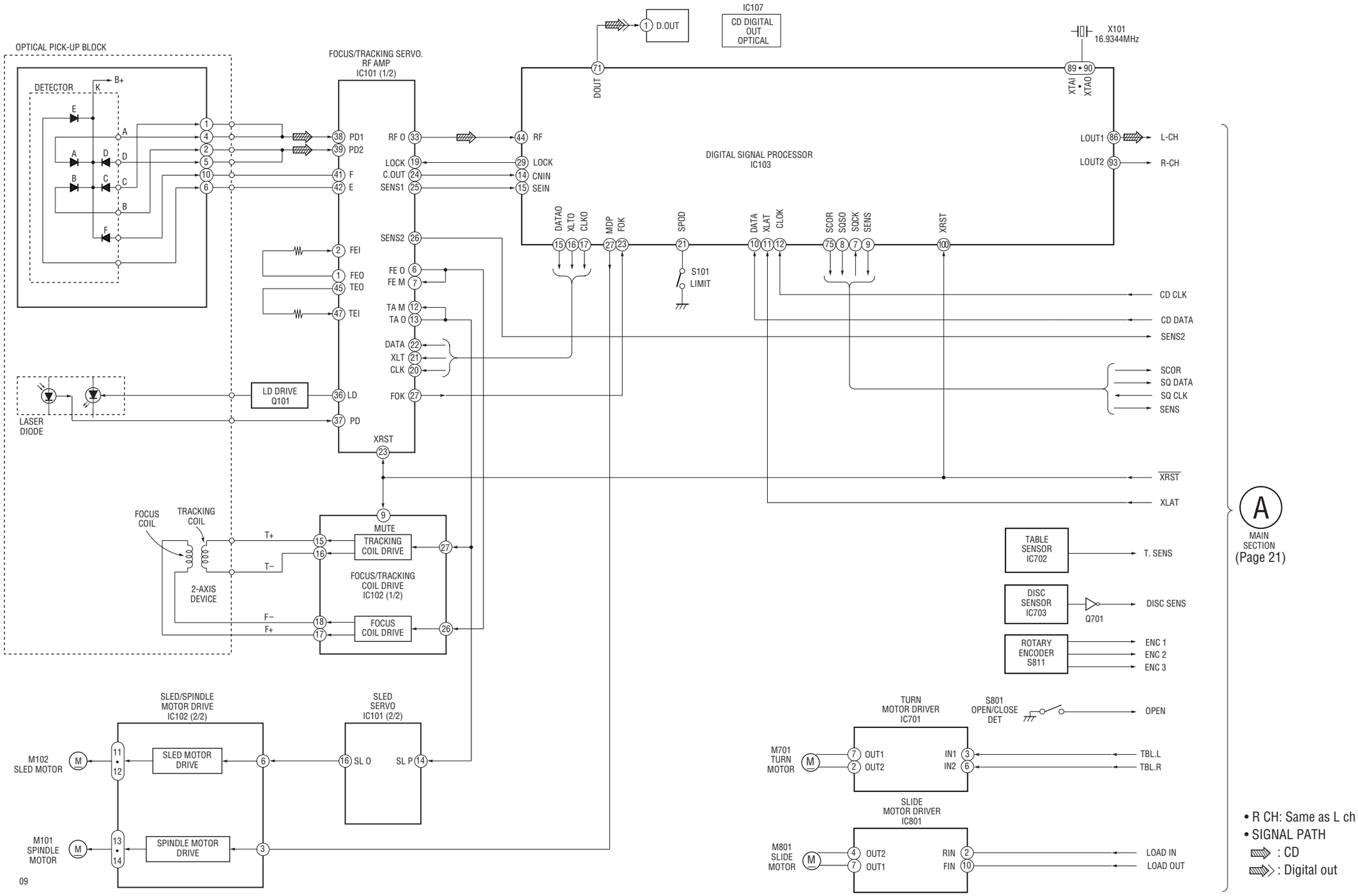
SECTION 6
DIAGRAMS

6-1. CIRCUIT BOARDS LOCATION



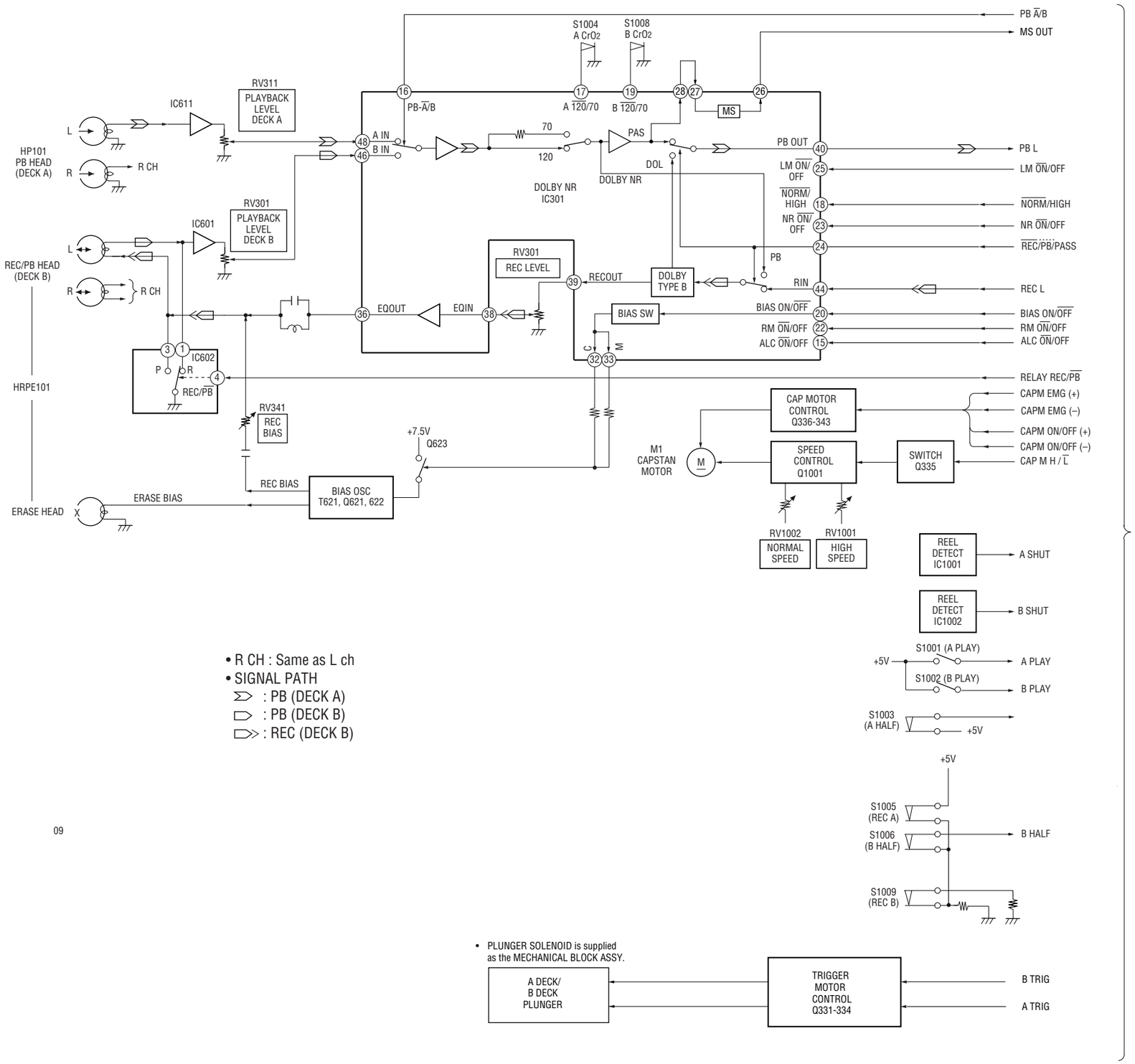


6-2. BLOCK DIAGRAMS
– CD SECTION –



• R CH: Same as L ch
• SIGNAL PATH
: CD
: Digital out

– DECK SECTION –

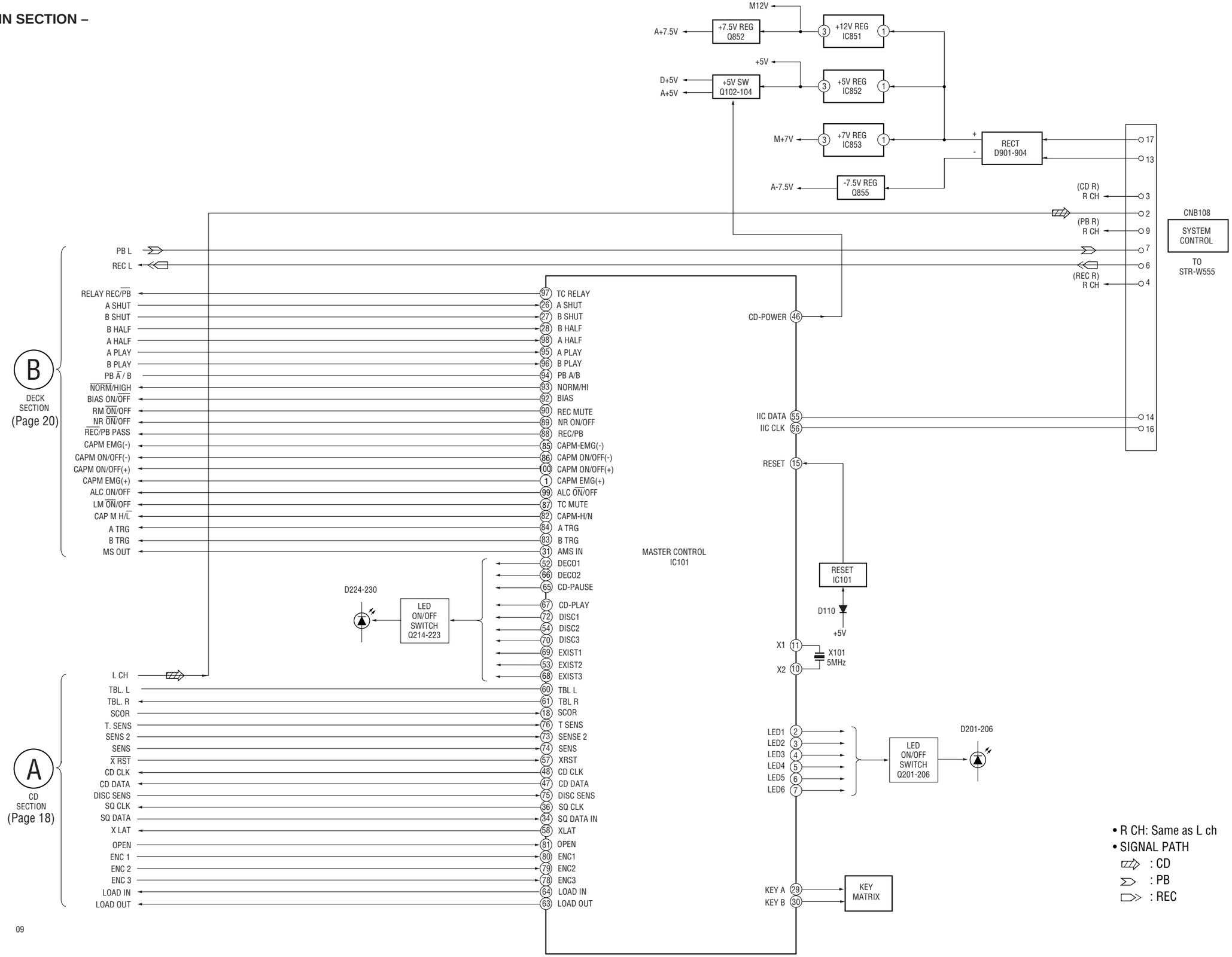


B
MAIN SECTION
(Page 21)

• R CH : Same as L ch
• SIGNAL PATH
: PB (DECK A)
: PB (DECK B)
: REC (DECK B)

09

– MAIN SECTION –



- R CH: Same as L ch
- SIGNAL PATH
  - : CD
  - : PB
  - : REC

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS. (In addition to this, the necessary note is printed in each block.)

For schematic diagrams.

Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- : fusible resistor.
- : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

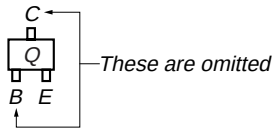
- B+ : B+ Line.
- B− : B– Line.
- : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  - : FM
  - : AM
  - : PB (DECK A)
  - : PB (DECK B)
  - : REC (DECK B)
  - : CD
  - : digital out

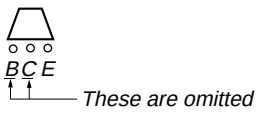
For printed wiring boards.

Note:

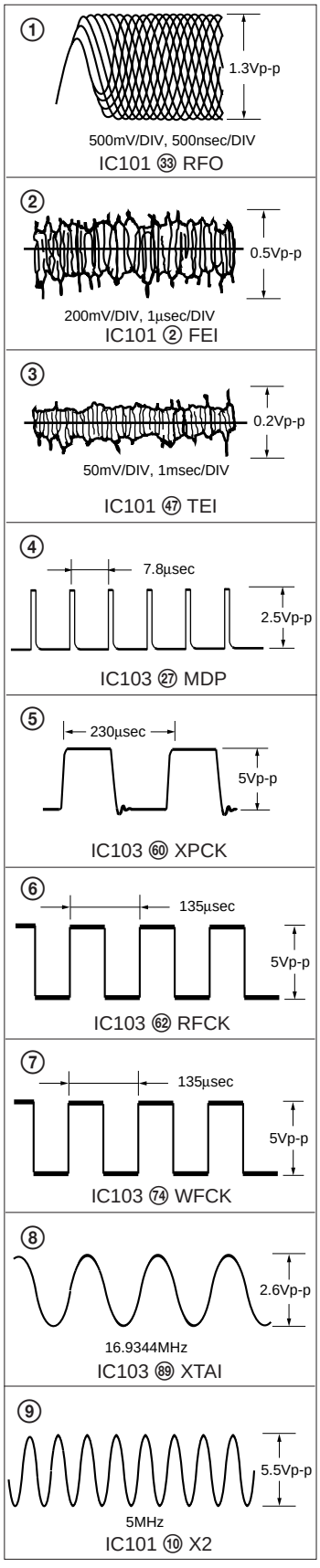
- : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ○ : Through hole.
- : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

• Indication of transistor





WAVEFORMS

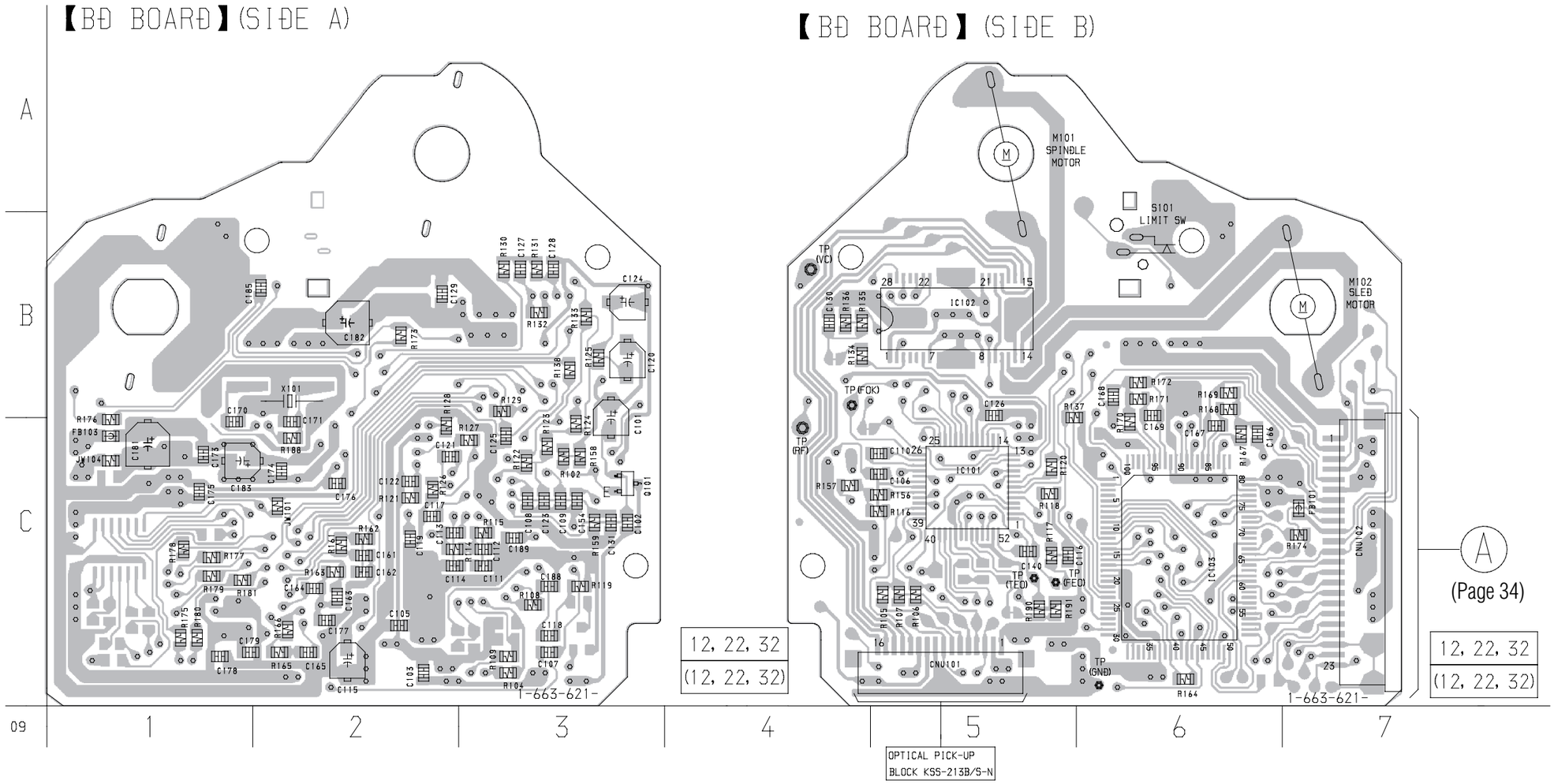


6-3. PRINTED WIRING BOARD – CD SECTION –

• See page 15 for Circuit Boards Location.

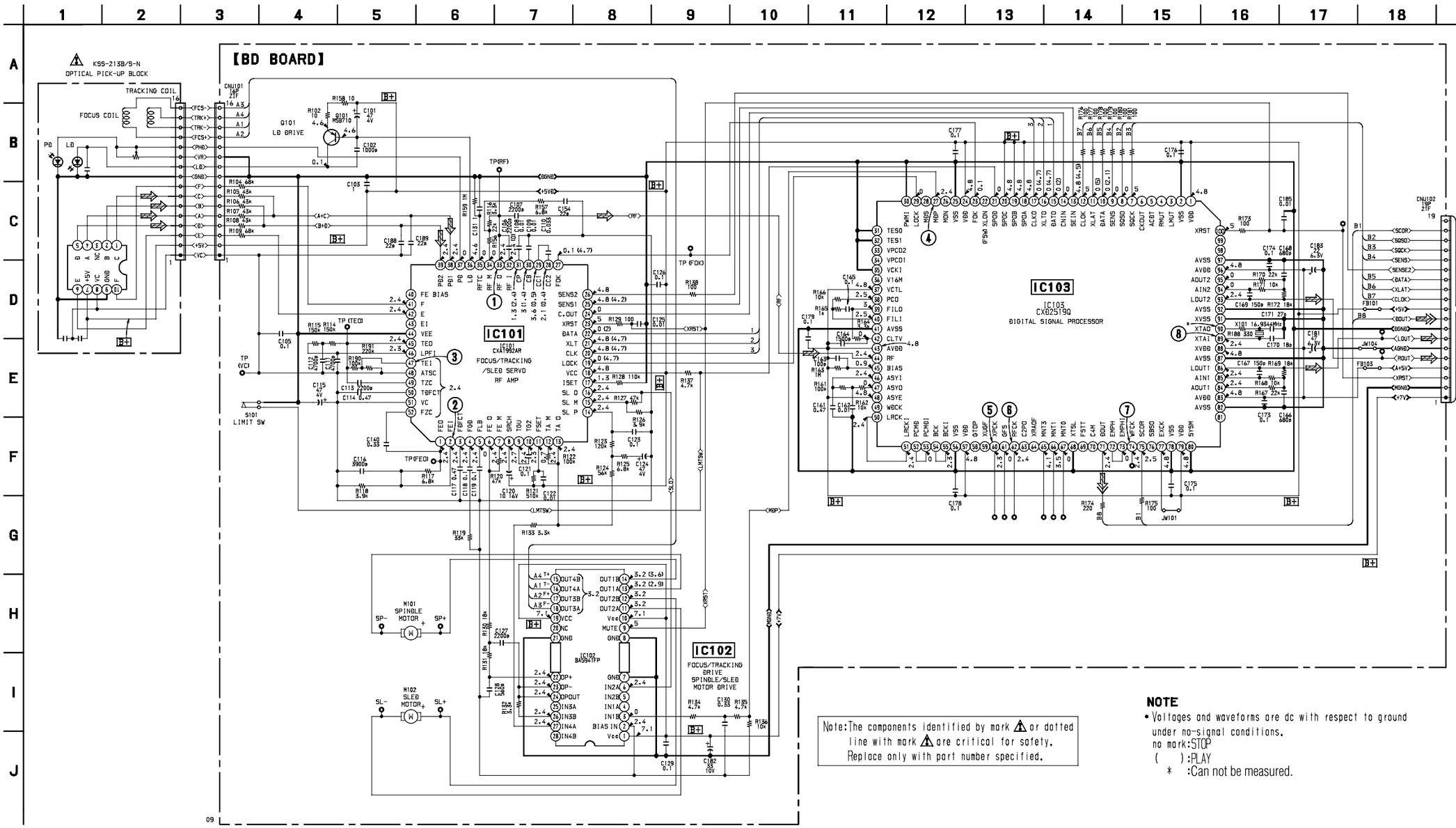
• **Semiconductor Location**

Ref. No.	Location
IC101	C-5
IC102	B-5
IC103	C-6
Q101	C-3



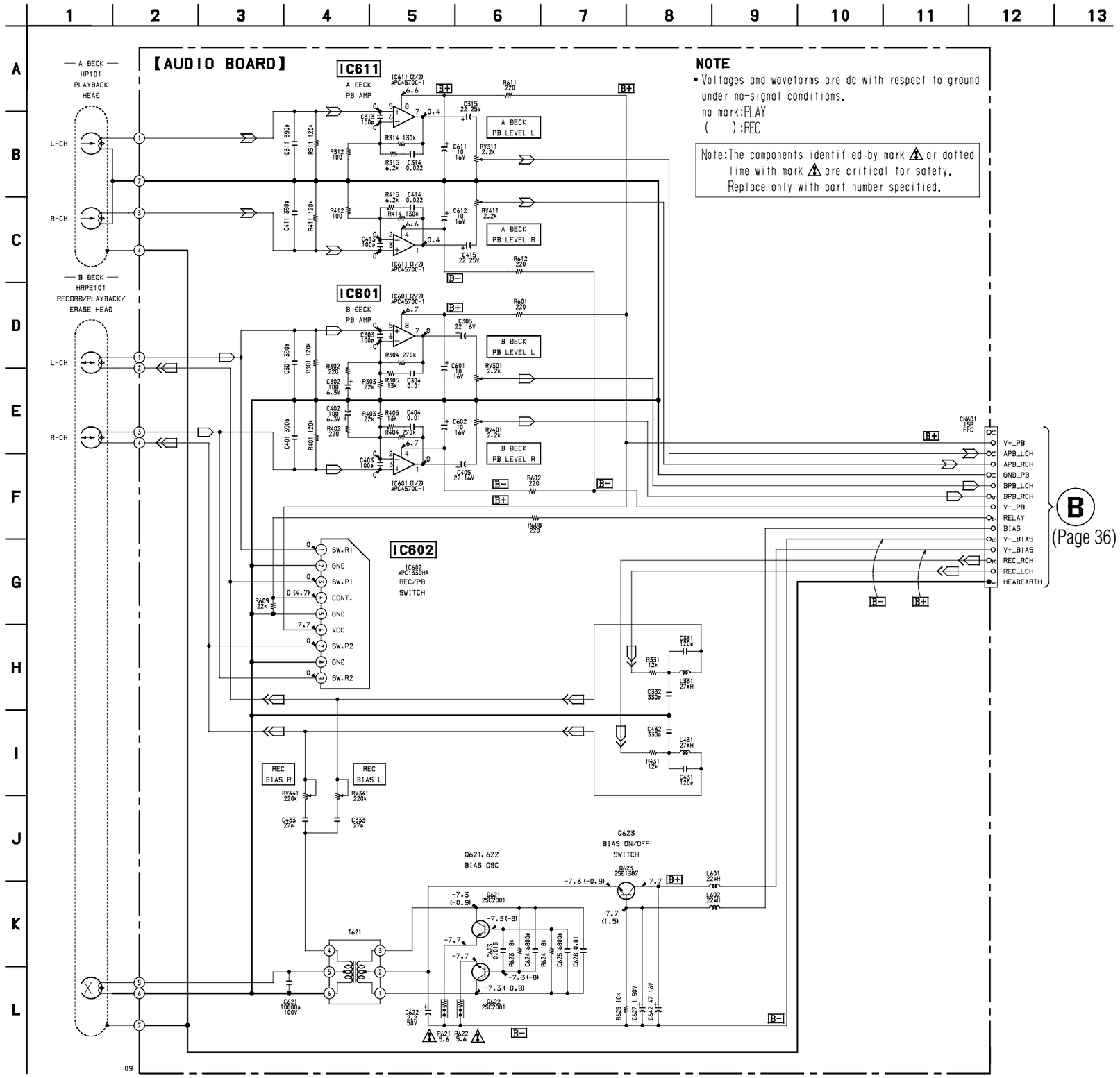
6-4. SCHEMATIC DIAGRAM – CD SECTION –

- See page 23 for Waveforms.
- See page 49 for IC Block Diagrams.
- See page 52 for IC Pin Functions.



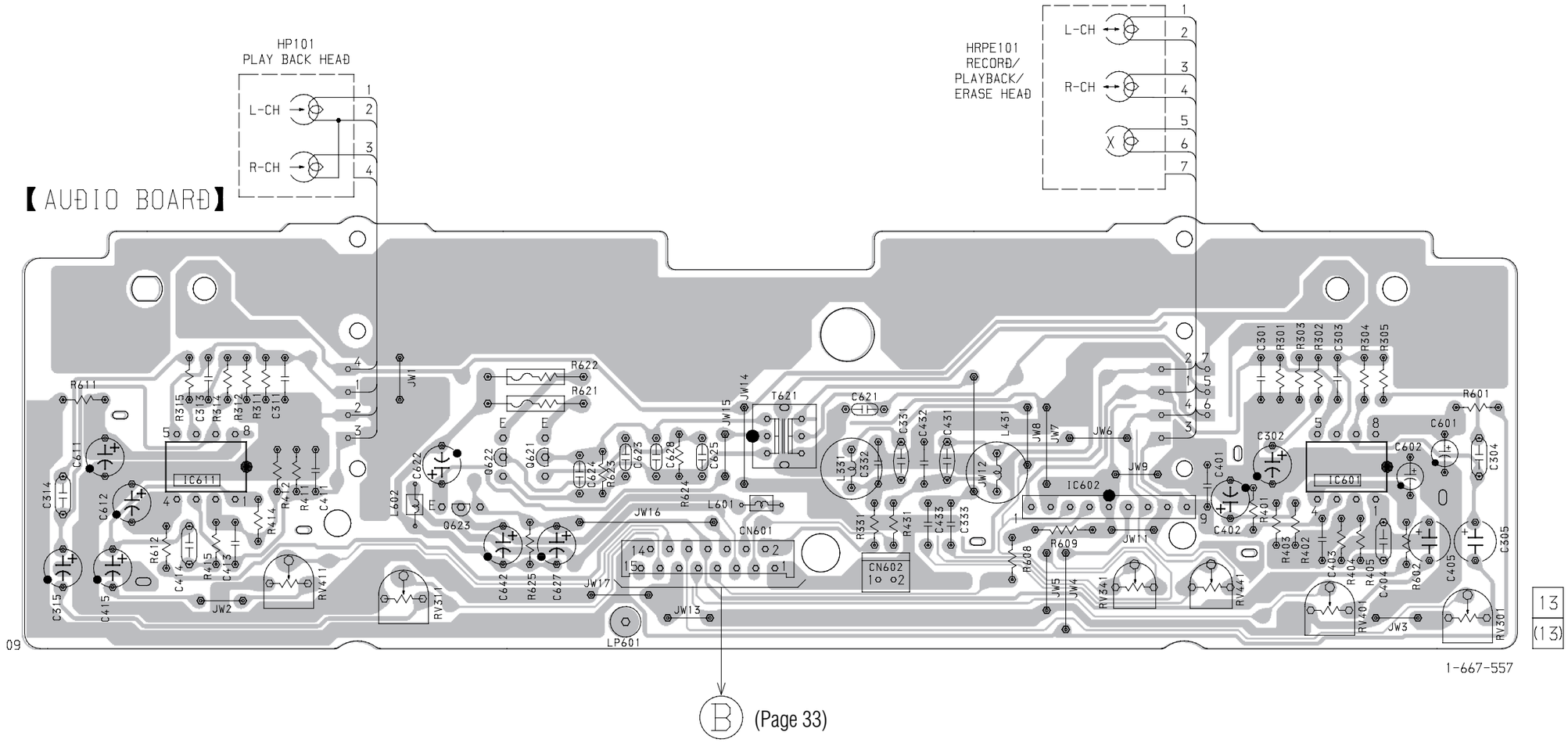
6-5. SCHEMATIC DIAGRAM – DECK SECTION –

• See page 51 for IC Block Diagrams.



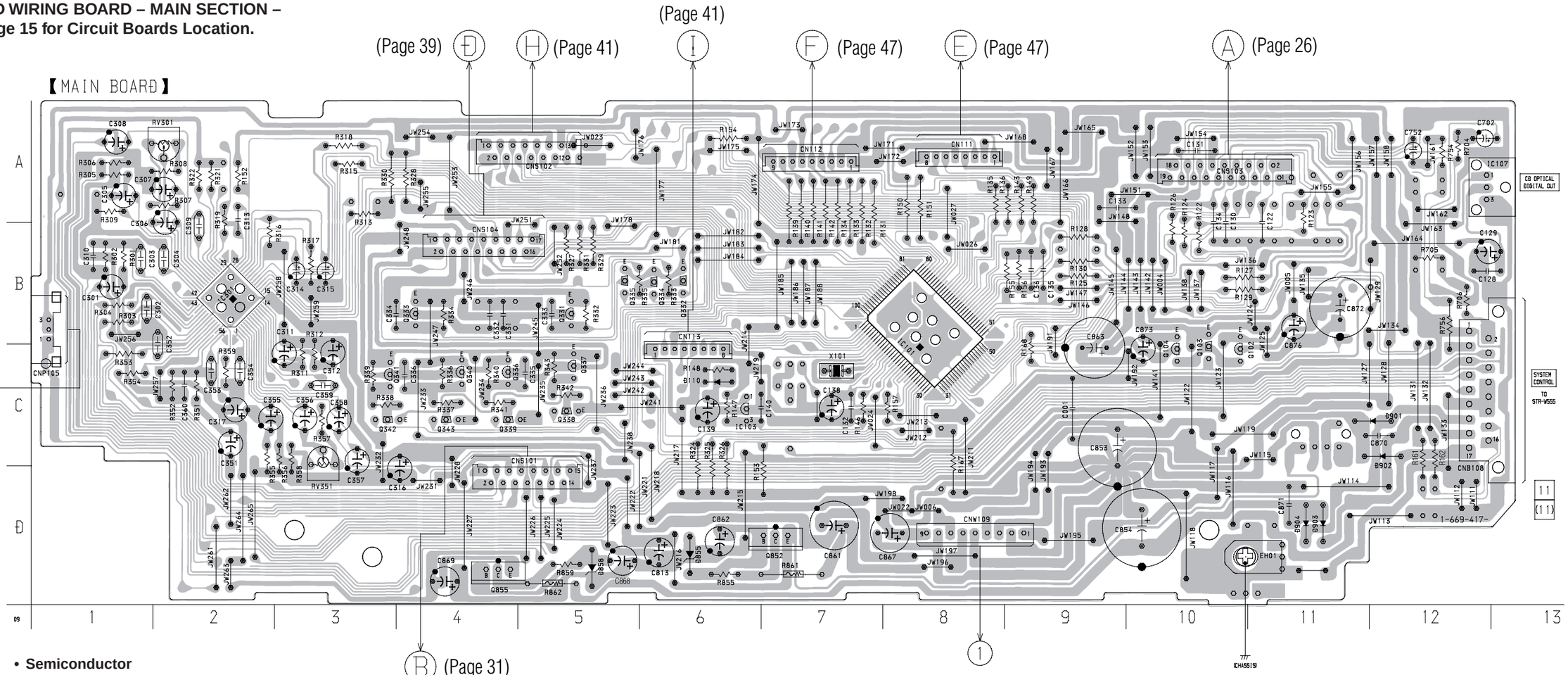
6-6. PRINTED WIRING BOARD – DECK SECTION –

• See page 15 for Circuit Boards Location.



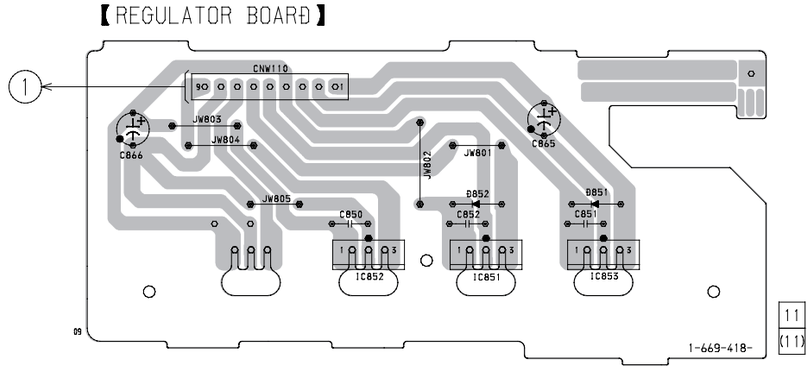
6-7. PRINTED WIRING BOARD – MAIN SECTION –

• See page 15 for Circuit Boards Location.



• Semiconductor Location

Ref. No.	Location
D110	C-6
D855	D-6
D858	D-5
D901	C-12
D902	C-12
D903	D-11
D904	D-11
IC101	B-8
IC103	C-6
IC107	A-13
IC301	B-2
Q102	C-10
Q103	C-10
Q104	C-10
Q331	B-5
Q332	B-6
Q333	B-4
Q334	B-6
Q335	B-5
Q336	C-4
Q337	C-5
Q338	C-5
Q339	C-4
Q340	C-4
Q341	C-3
Q342	C-3
Q343	C-4
Q852	D-7
Q855	D-4



6-8. SCHEMATIC DIAGRAM – MAIN (1/2) SECTION –

【MAIN BOARD (1/2)】

NOTE

- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark:PLAY
  ( ):REC

(Page 46) E
F (Page 46)
A (Page 28)
D (Page 39)
B (Page 30)

CN111 8P
CN112 9P
CN103 19P
CN104 FFC 17P
CN101 15P EH

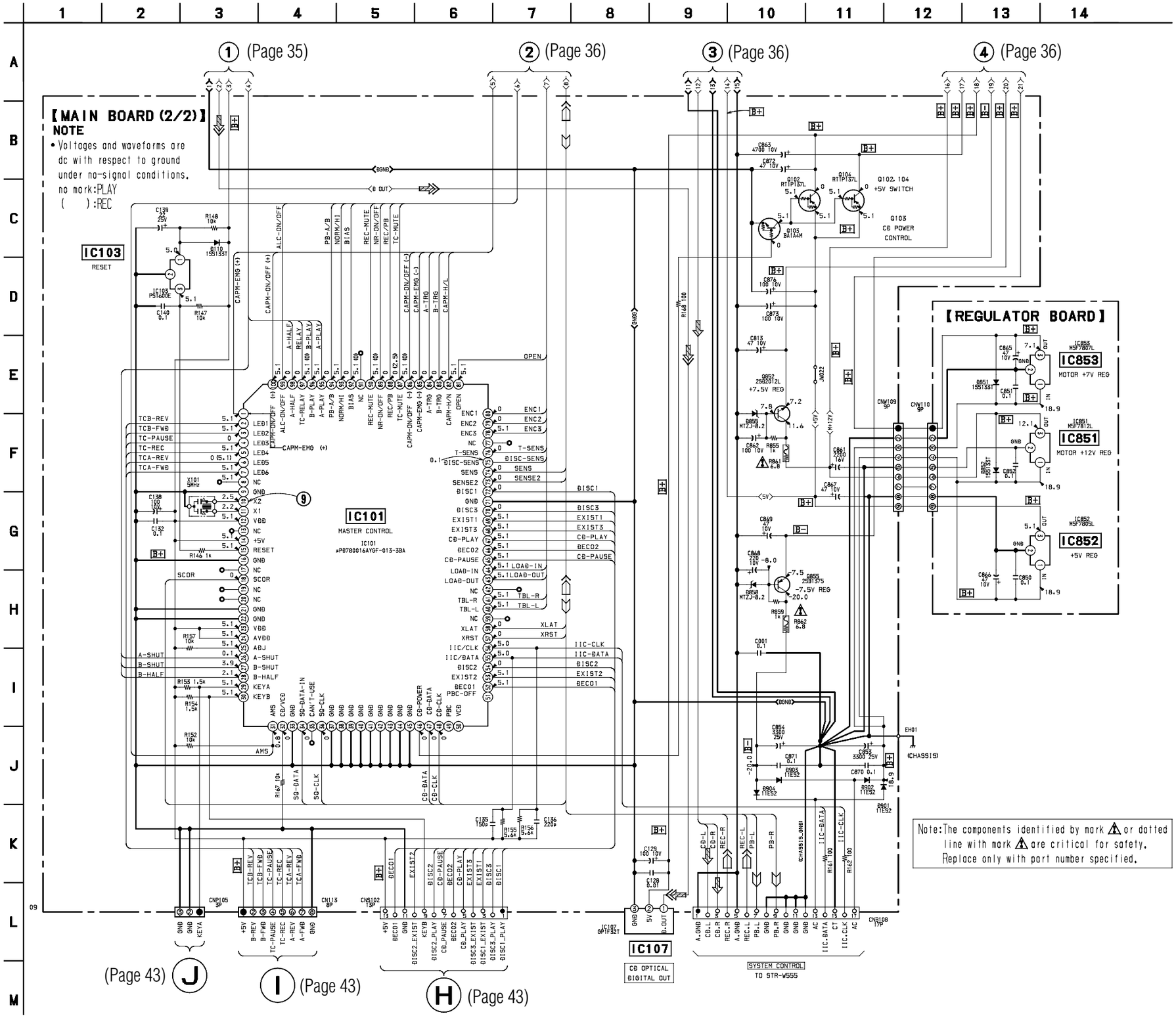
Q331-334 TRIGGER MOTOR CONTROL
Q335 CAPSTAN SPEED CONTROL SWITCH
Q340-343 CAPSTAN MOTOR CONTROL
Q336-339 CAPSTAN MOTOR CONTROL
IC301 BOLBY NR
IC301 HA12215

REC LEVEL R
REC LEVEL L

1 (Page 37)
2 (Page 38)
3 (Page 38)
4 (Page 38)

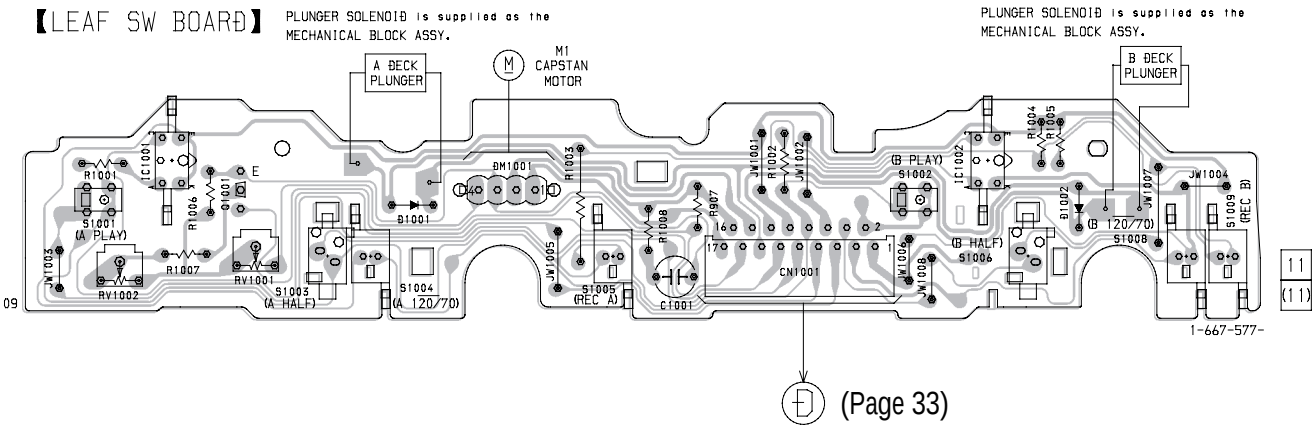
6-9. SCHEMATIC DIAGRAM – MAIN (2/2) SECTION –

- See page 33 for Printed Wiring Board.
- See page 57 for IC Pin Functions.

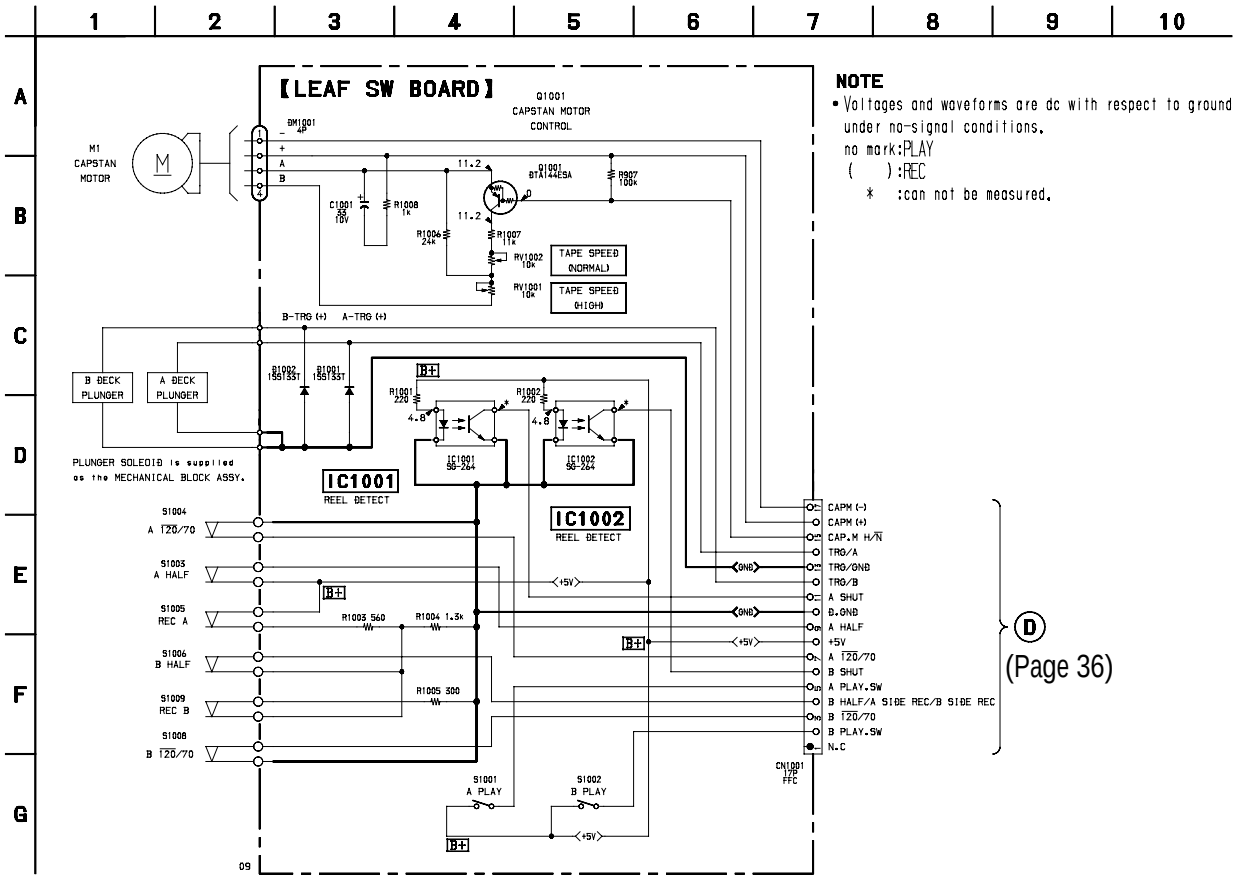


6-10. PRINTED WIRING BOARD – LEAF SW SECTION –

• See page 15 for Circuit Boards Location.

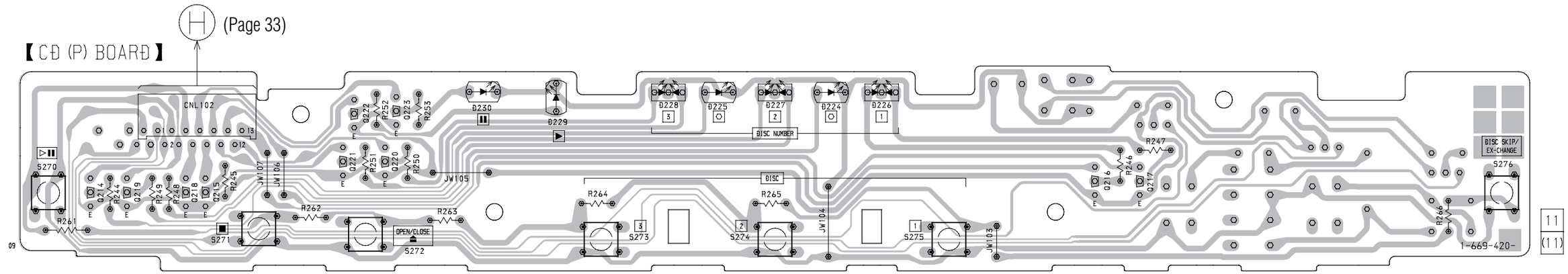


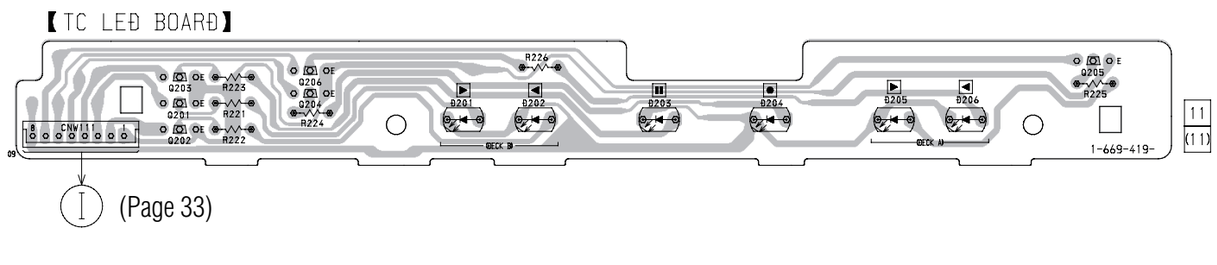
6-11. SCHEMATIC DIAGRAM – LEAF SW SECTION –

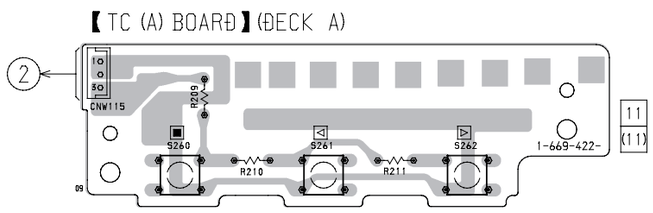


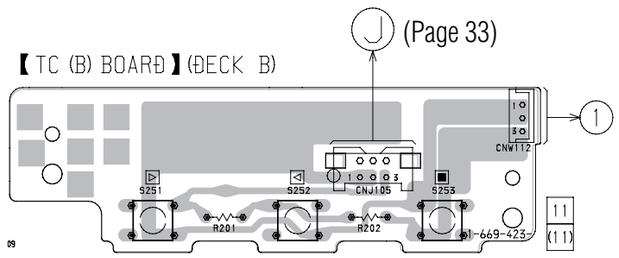
6-12. PRINTED WIRING BOARD – PANEL SECTION –

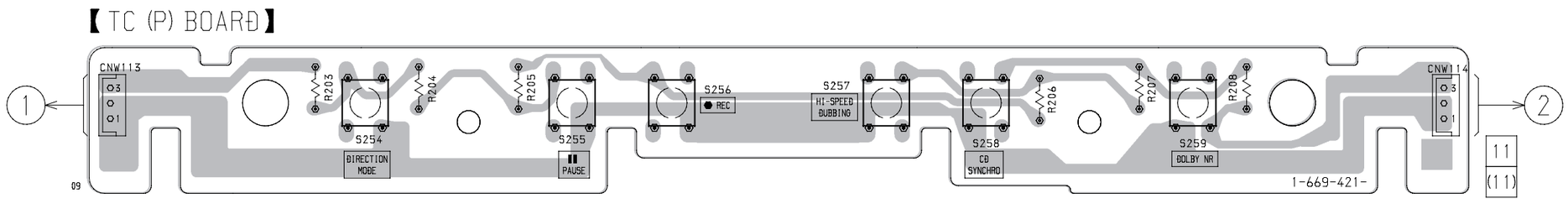
• See page 15 for Circuit Boards Location.



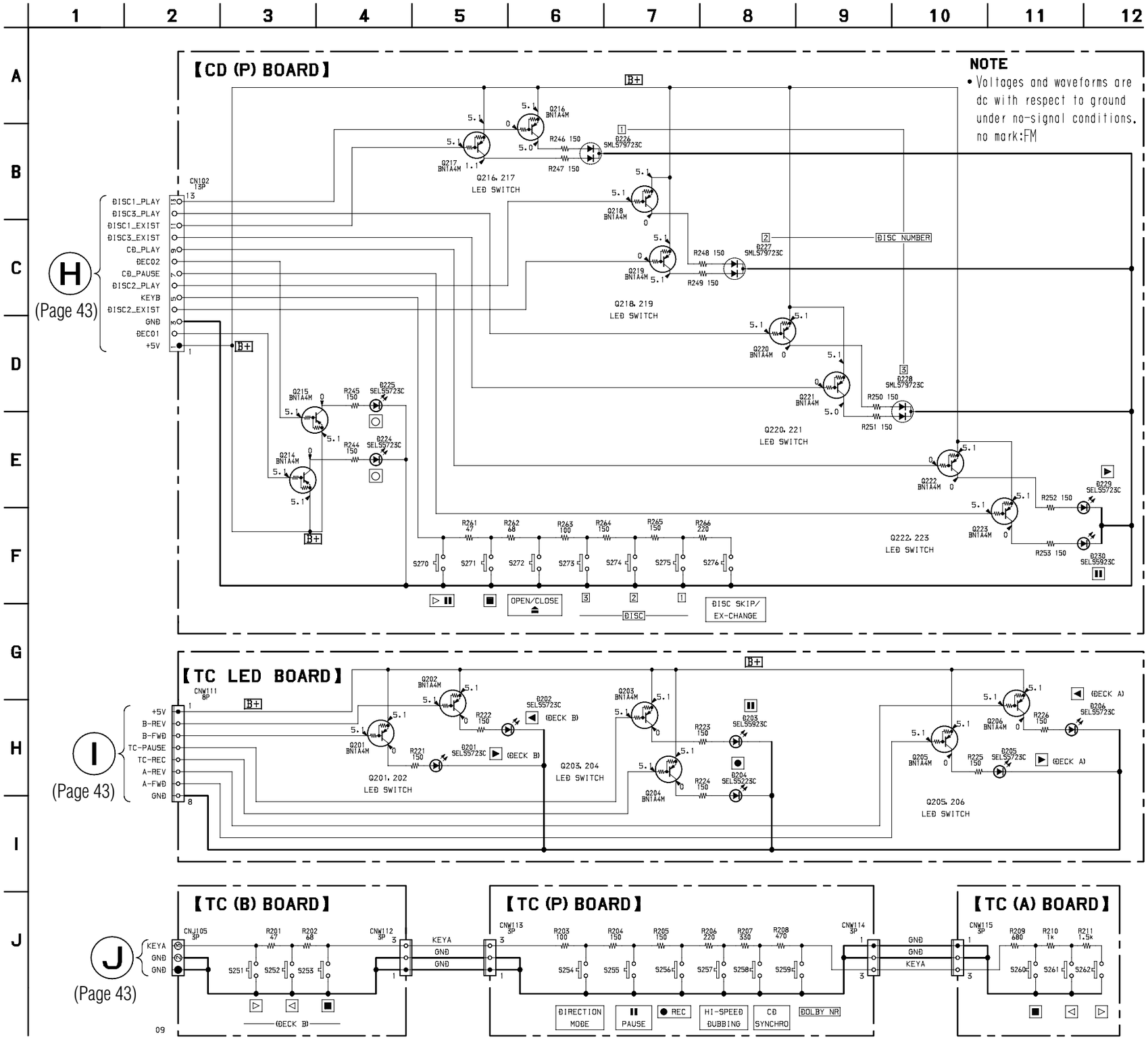






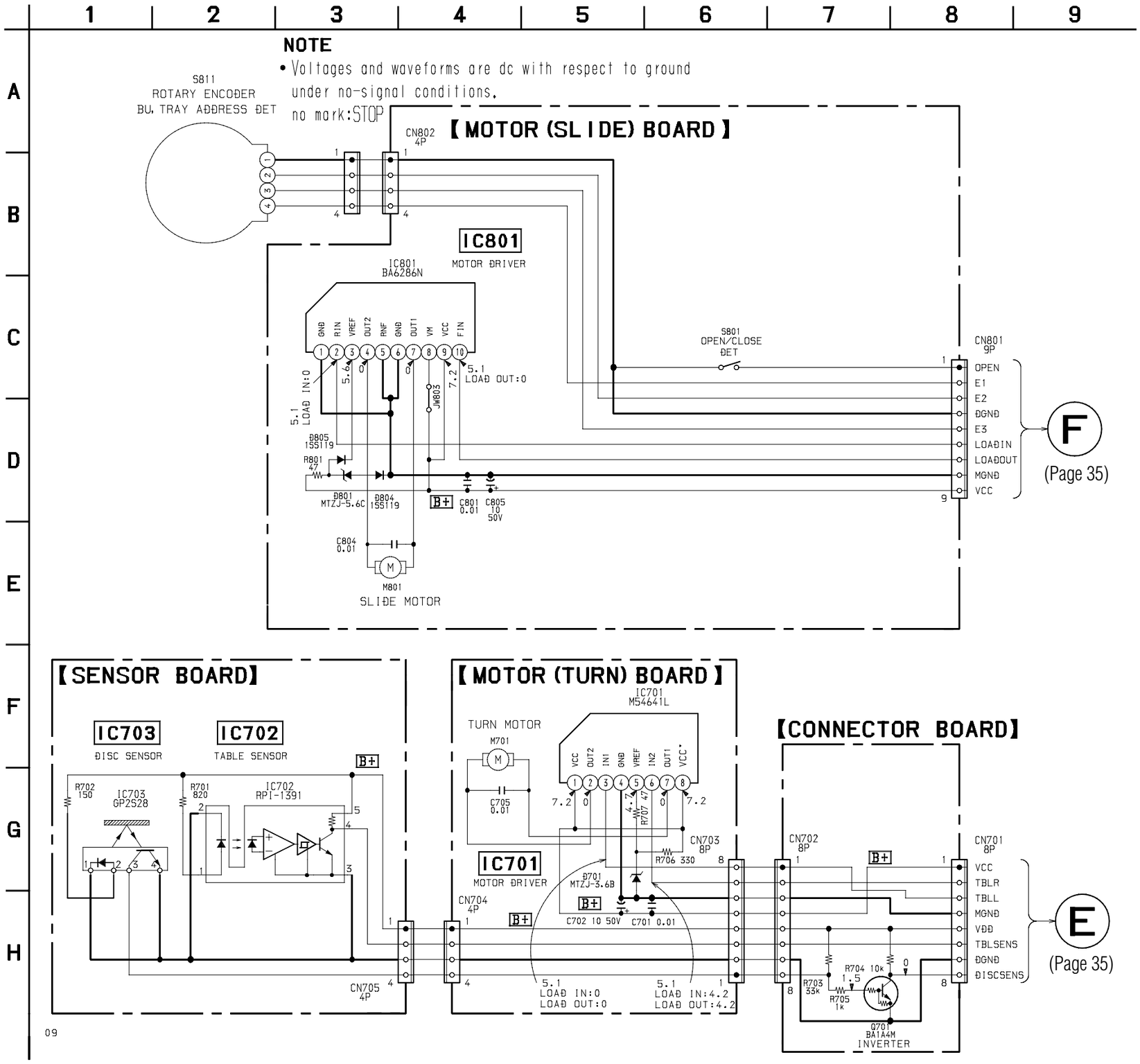


6-13. SCHEMATIC DIAGRAM – PANEL SECTION –



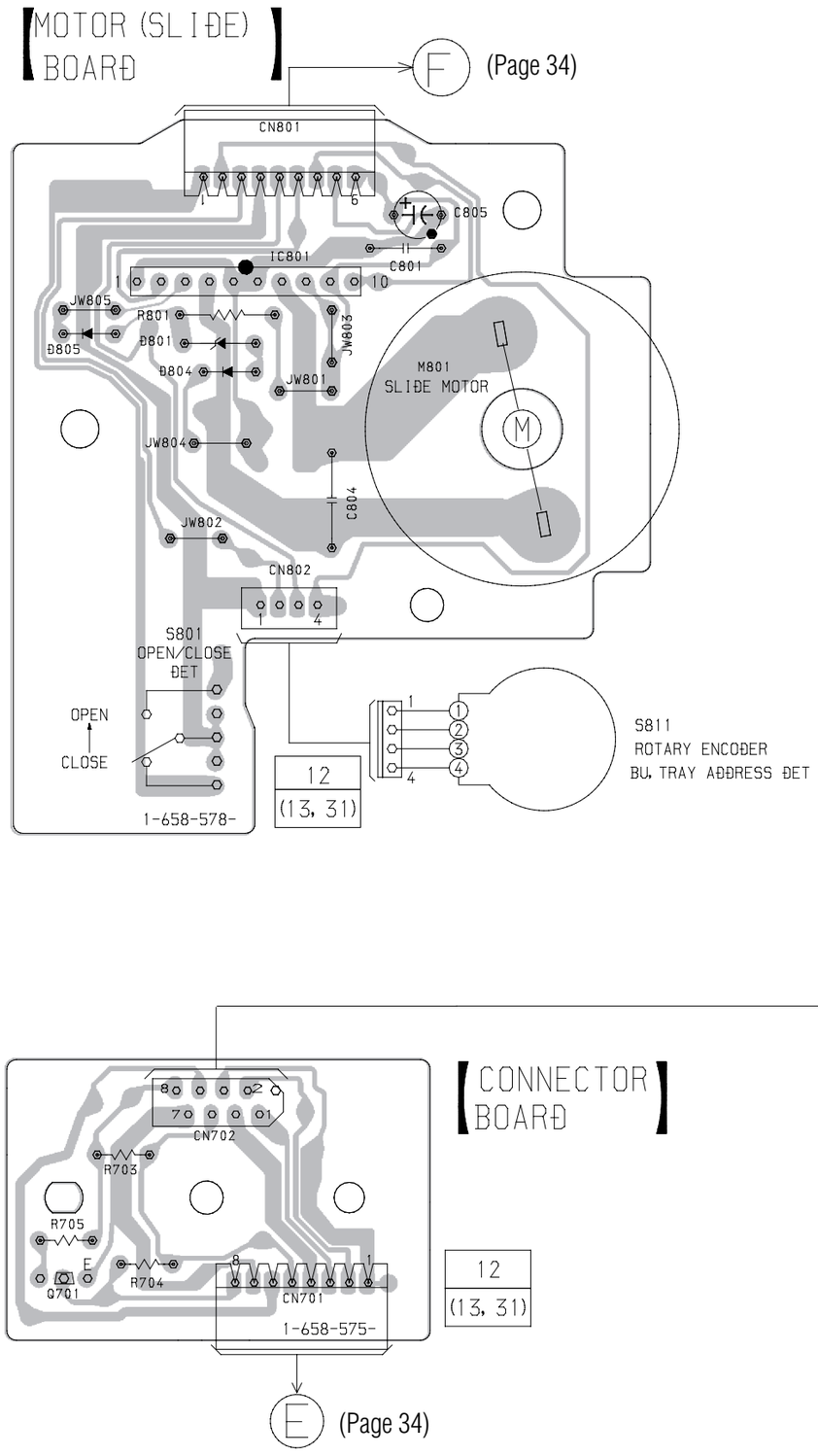
6-14. SCHEMATIC DIAGRAM – CD MOTOR SECTION –

• See page 51 for IC Block Diagrams.



6-15. PRINTED WIRING BOARD – CD MOTOR SECTION –

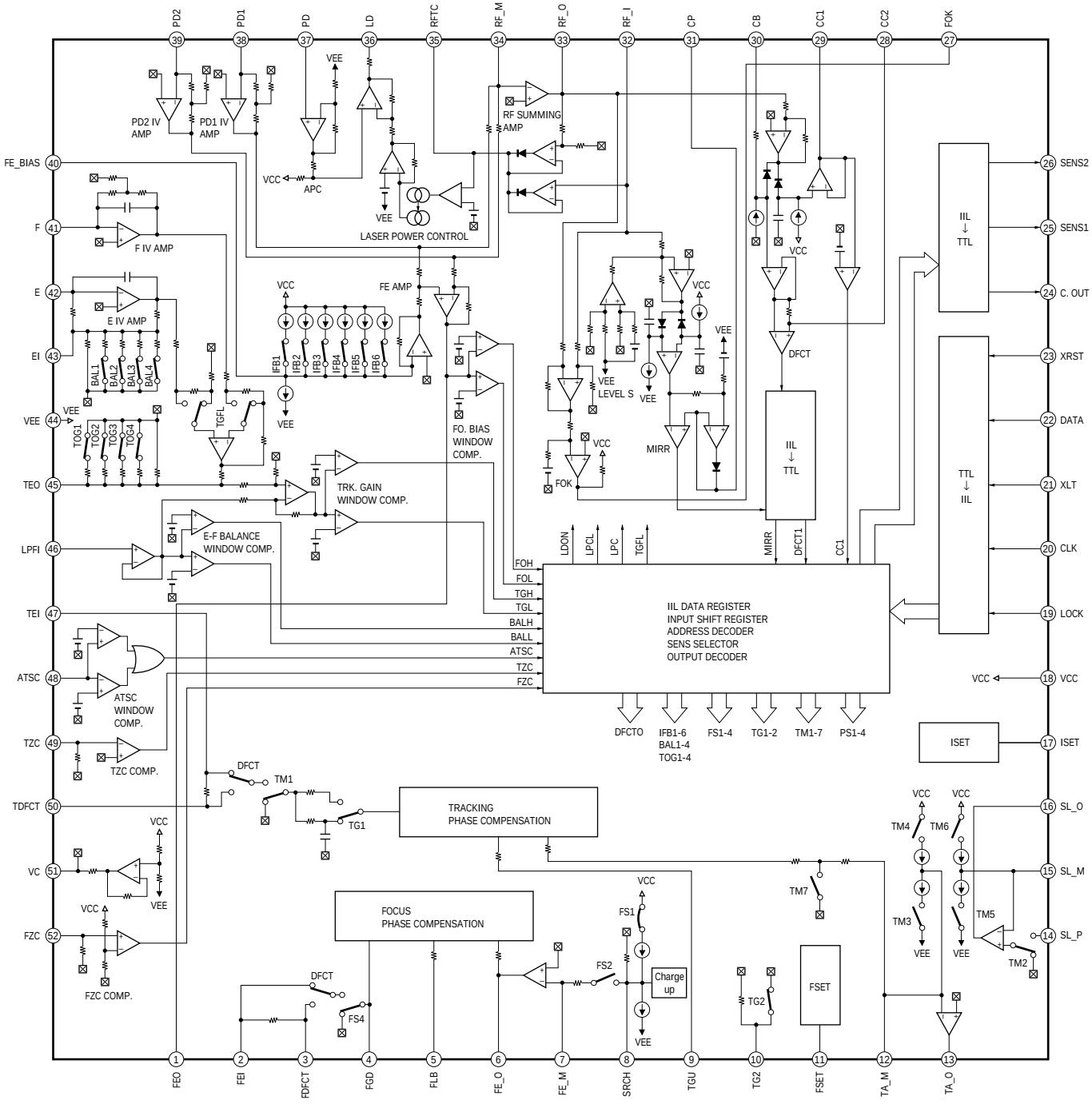
• See page 15 for Circuit Boards Location.



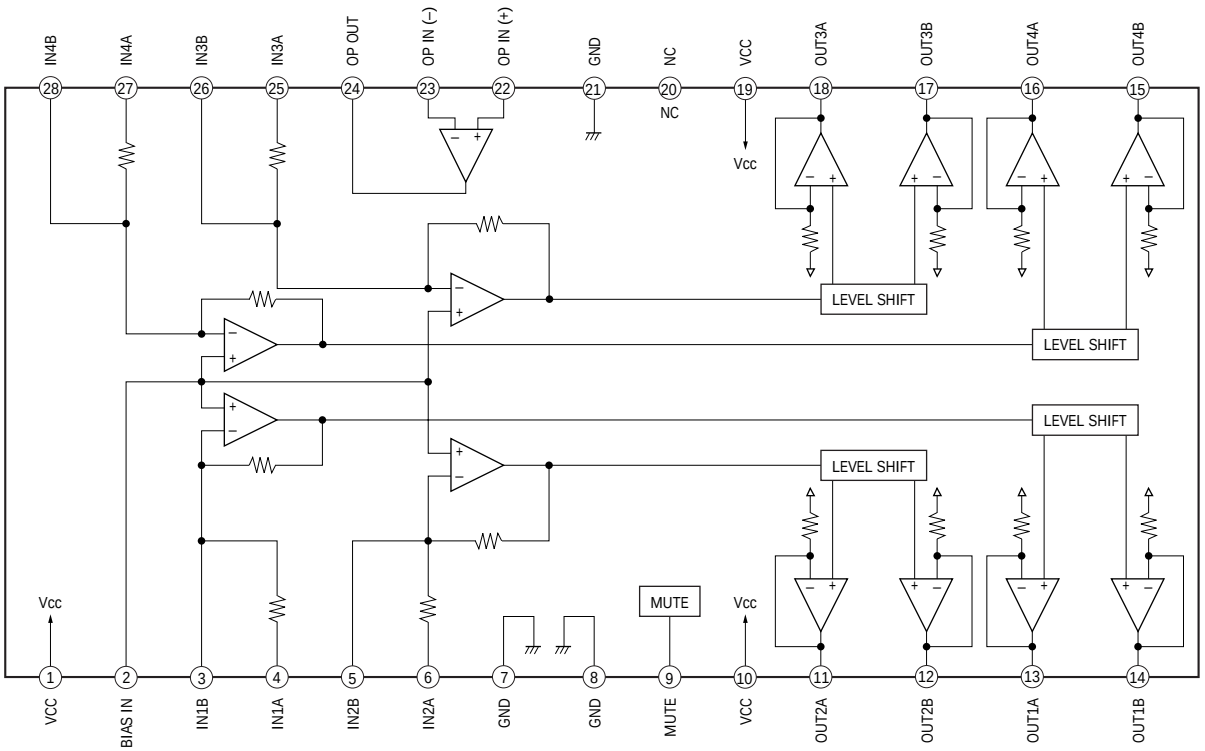
6-16. IC BLOCK DIAGRAMS

• CD section

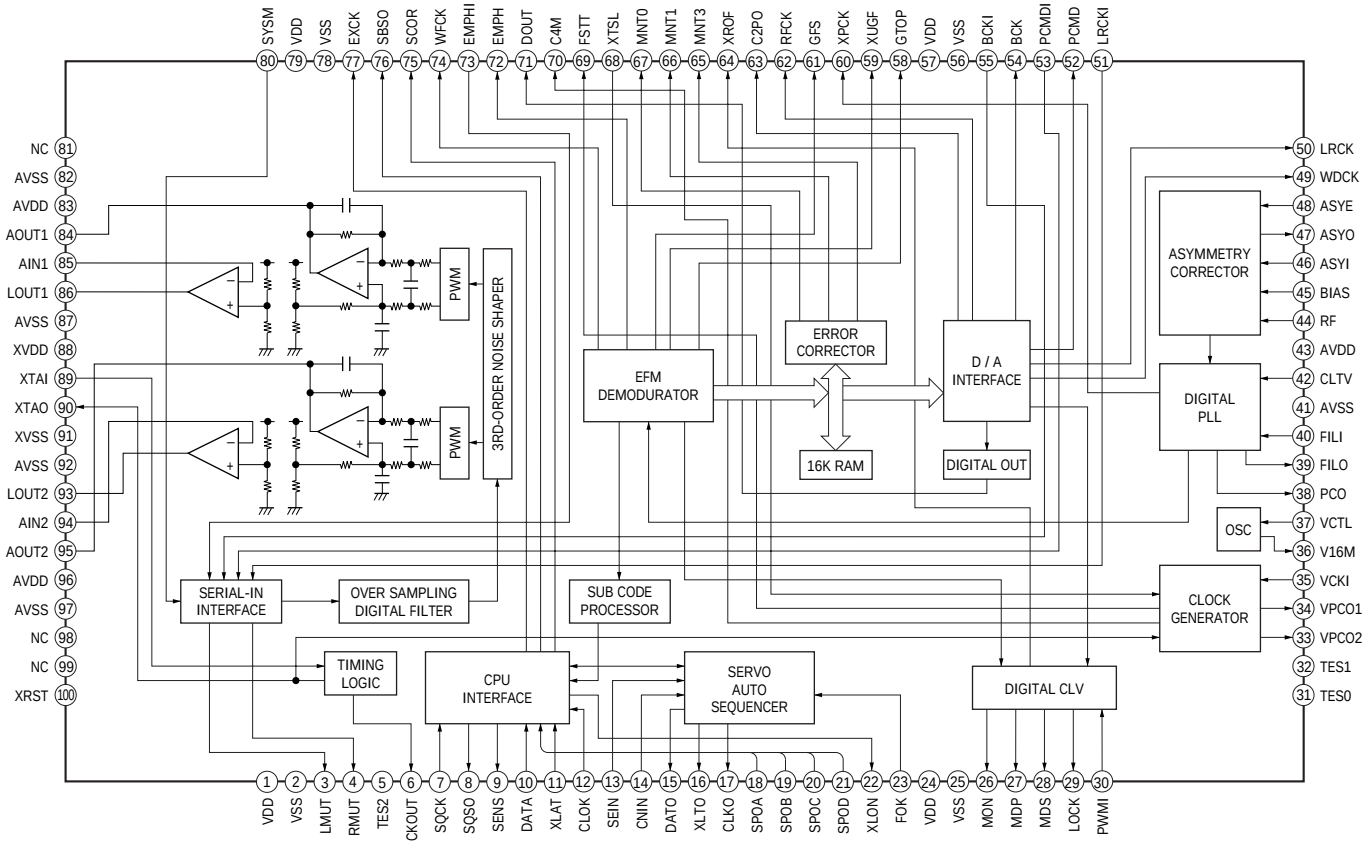
IC101 CXA1992AR



IC102 BA5941FP

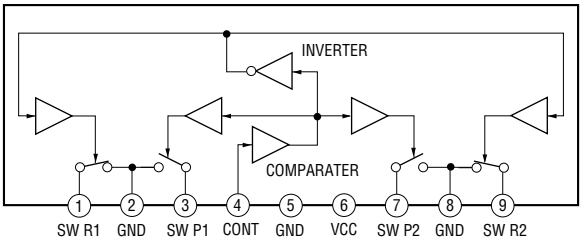


IC103 CXD2519Q



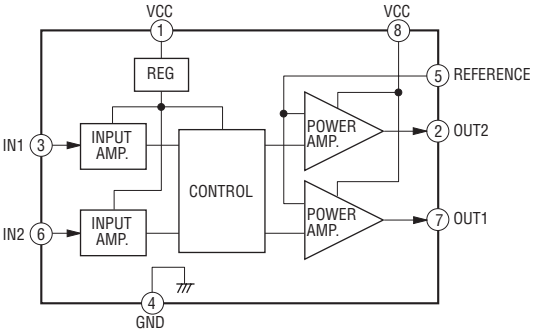
• **Deck section**

IC602 uPC1330HA

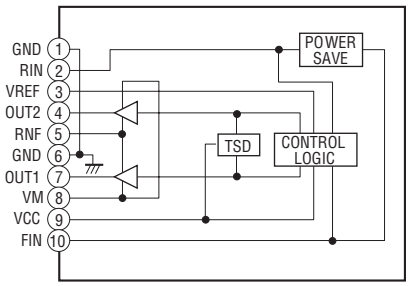


• **CD motor section**

IC701 M54641L



IC801 BA6286N



6-17. IC PIN FUNCTIONS

• IC101 FOCUS/TRACKING/SLED SERVO RF AMP (CXA1992AR)

Pin No.	Pin Name	I/O	Function
1	FEO	O	Focus error amplifier output Connected internally to the window comparator input for bias adjustment
2	FEI	I	Focus error input
3	FDFCT	I	Capacitor connection pin for defect time constant
4	FGD	I	Ground this pin through a capacitor for cutting the focus servo high-frequency gain
5	FLB	I	External time constant setting pin for boosting the focus servo low-frequency
6	FE O	O	Focus drive output
7	FE M	I	Focus amplifier inverted input
8	SRCH	I	External time constant setting pin for generating focus search waveform
9	TGU	I	External time constant setting pin for switching tracking high-frequency gain
10	TG2	I	External time constant setting pin for switching tracking high-frequency gain
11	FSET	I	Peak frequency setting pin for focus and tracking phase compensation amplifier
12	TA M	I	Tracking amplifier inverted input
13	TA O	O	Tracking drive output
14	SL P	I	Sled amplifier non-inverted input
15	SL M	I	Sled amplifier inverted input
16	SL O	O	Sled drive output
17	ISET	I	Connect an external capacitance to set the current which determines the Focus search, Track jump, and Sled kick heights
18	V_{CC}	I	Positive power supply
19	LOCK	I	The sled overrun prevention circuit operates when this pin is Low (No pull-up resistance)
20	CLK	I	Serial data transfer clock input from CPU (No pull-up resistance)
21	XLT	I	Lach input from CPU (No pull-up resistance)
22	DATA	I	Serial data input from CPU (No pull-up resistance)
23	XRST	I	Reset input; resets at Low (No pull-up resistance)
24	C.OUT	O	Track number count signal output
25	SENS1	O	Outputs FZC, DFCT1, TZC, BALH, TGH, FOH, ATSC, and others according to the command from CPU
26	SENS2	O	Outputs DFCT2, MIRR, BALL, TGL, FOL,and others according to the command from CPU
27	FOK	O	Focus OK comparator output
28	CC2	I	Input for the defect bottom hold output with capacitance coupled
29	CC1	O	Defect bottom hold output Connected internally to the interruption comparator input
30	CB	I	Connection pin for defect bottom hold capacitor
31	CP	I	Connection pin for MIRR hold capacitor MIRR comparator non-inverted input
32	RF I	I	Input for the RF summing amplifier output with capacitance coupled
33	RF O	O	RF summing amplifier output Eye-pattern check point

• Abbreviation

FZC : Focus zero-cross
DFCT : Defect
TZC : Tracking zero-cross
BALH : E-F Balance (High)
TGH : Tracking Gain (High)
FOH : Focus Bias (High)
ATSC : Anti Shock
MIRR : Mirror
BALL : E-F Balance (Low)
TGL : Tracking Gain (Low)
FOL : Focus Bias (Low)

Pin No.	Pin Name	I/O	Function
34	RF M	I	RF summing amplifier inverted input The RF amplifier gain is determined by the resistance connected between this pin and RFO pin
35	RFTC	I	External time constant setting pin during RF level control
36	LD	O	APC amplifier output
37	PD	I	APC amplifier input
38	PD1	I	RF I-V amplifier inverted input
39	PD2	I	Connect these pins to the photo diode A+C and B+D pins
40	FE BIAS	I	Bias adjustment of focus error amplifier Leave this pin open for automatic adjustment
41	F	I	F I-V and E I-V amplifier inverted input
42	E	I	Connect these pins to photo diodes F and E
43	EI	–	I-V amplifier E gain adjustment (When not using automatic balance adjustment)
44	V_{EE}	–	Negative power supply
45	TEO	O	Tracking error amplifier output E-F signal is output
46	LPFI	I	Comparator input for balance adjustment (Input from TEO through LPF)
47	TEI	I	Tracking error input
48	ATSC	I	Window comparator input for ATSC detection
49	TZC	I	Trackig zero-cross comparator input
50	TDFCT	I	Capacitor connection pin for defect time constant
51	VC	O	(V_{CC} + V_{EE})/2 direct voltage output
52	FZC	I	Focus zero-cross comparator input

• Abbreviation
APC : Auto Power Control

• **IC103 DIGITAL SIGNAL PROCESSOR (CXD2519Q)**

Pin No.	Pin Name	I/O	Function
1	VDD	–	+5V power supply
2	VSS	–	Ground
3	LMUT	O	Lch "L" detection flog (Not used)
4	RMUT	O	Rch "L" detection flog (Not used)
5	ACDT	O	Test output (Not used)
6	CKOUT	O	Master clock divider output (Not used)
7	SQCK	I	Clock input for SQSO read out
8	SQSO	O	Serial output for Sub-Q 80bit
9	SENS	O	SENS signal output to CPU
10	DATA	I	Serial data input, supplied from CPU
11	XLAT	I	Latch input, supplied from CPU
12	CLOK	I	Serial data transfer clock input, supplied from CPU
13	SEIN	I	SENS input from IC101
14	CNIN	I	Numbers of track jump counted signal input
15	DATO	O	Serial data output to IC101
16	XLTO	O	Serial data latch output to IC101
17	CLKO	O	Serial data transfer clock output to IC101
18	SPOA	I	Micro computer demodulation interface (Input A)
19	SPOB	I	Micro computer demodulation interface (Input B)
20	SPOC	I	Micro computer demodulation interface (Input C)
21	SPOD	I	Micro computer demodulation interface (Input D)
22	XLON	O	Micro computer demodulation interface (Output)
23	FOK	I	Focus OK input
24	VDD	–	+5V power supply
25	VSS	–	Ground
26	MON	O	Output to control ON/OFF of spindle motor (Not used)
27	MDP	O	Output to control spindle motor servo
28	MDS	O	Output to control spindle motor servo (Not used)
29	LOCK	O	GFS is sampled by 460Hz
30	PWMI	I	Input to control the outside spindle motor
31	TES0	I	Test pin (Connected to ground)
32	TES1	I	Test pin (Connected to ground)
33	VPCO2	O	Charge-pump output (Not used)
34	VPCO1	O	Charge-pump output (Not used)
35	VCKI	I	VCO2 oscillator input (Not used)
36	V16M	O	VCO2 oscillator output (Not used)
37	VCTL	I	VCO2 control voltage input
38	PCO	O	Charge-pump output to master PLL
39	FILO	O	Filter output to master PLL
40	FILI	I	Filter input for master PLL

• Abbreviation
GFS : Guarded Frame Sync
PLL : Phase Locked Loop

Pin No.	Pin Name	I/O	Function
41	AVSS	–	Analog ground
42	CLTV	I	Control voltage input for VCO
43	AVDD	–	Analog power supply
44	RF	I	EFM signal input
45	BIAS	I	Asymmetry circuit constant current input
46	ASYI	I	Asymmetry comparate voltage input
47	ASYO	O	EFM full swing output (“L” =VSS, “H” =VDD)
48	ASYE	I	Asymmetry circuit ON/OFF (“L”=OFF, “H”=ON)
49	WDCK	O	D/A interface Word clock f=2fs (Not used)
50	LRCK	O	D/A interface LR clock output f=Fs
51	LRCKI	I	D/A interface LR clock input f=Fs
52	PCMD	O	D/A interface Serial data output
53	PCMDI	I	D/A interface Serial data input
54	BCK	O	D/A interface Bit clock output
55	BCKI	I	D/A interface Bit clock input
56	VSS	–	Ground
57	VDD	–	+5V power supply
58	GTOP	O	Not used
59	XUGF	O	Not used
60	XPLCK	O	EFM decoder PLL clock output
61	GFS	O	“H” Playback EFM sync and interpolation protection timming much
62	RFCK	O	Read frame clock signal output
63	C2PO	O	Not used
64	XRAOF	O	Internal RAM overflow detection signal output (Not used)
65	MNT3	O	Not used
66	MNT1	O	Not used
67	MNT0	O	Not used
68	XTSL	I	Not used
69	FSTT	O	2/3 divider output (Not used)
70	C4M	O	4.2336MHz output(Not used)
71	DOUT	O	Digital audio signal output
72	EMPH	O	Playback disc output in emphasis mode
73	EMPHI	I	“H” =Input when de-emphasis ON
74	WFCK	O	Write frame clock signal output
75	SCOR	O	Sub-code sync output
76	SBSO	O	Sub-P through Sub-W serial output
77	EXCK	I	Clock input for SBSO read-out
78	VSS	–	Ground
79	VDD	–	+5V power supply
80	SYSM	I	System mute input

• Abbreviation
EFM : Eight to Fourteen Modulation

Pin No.	Pin Name	I/O	Function
81	—	–	Not used
82	AVSS	–	Analog ground
83	AVDD	–	Analog power supply
84	AOUT1	O	Lch analog output
85	AIN1	I	Lch opamp input
86	LOUT1	O	Lch line output
87	AVSS	–	Analog ground
88	XVDD	–	Master clock power supply
89	XTAI	I	X’tal oscillator circuit input
90	XTAO	O	X’tal oscillator circuit output
91	XVSS	–	Master clock ground
92	AVSS	–	Analog ground
93	LOUT2	O	Rch line output
94	AIN2	I	Rch opamp input
95	AOUT2	O	Rch analog output
96	AVDD	–	Analog power supply
97	AVSS	–	Analog ground
98	—	–	Not used
99	—	–	Not used
100	XRST	I	System reset input

• **IC101 MASTER CONTROL (uPD780016AYGF-013-3BA)**

Pin No.	Pin Name	I/O	Function
1	CAPM-EMG (+)	I	Capstan motor control 1 (+) signal output
2 to 7	LED1 to LED6	O	LED
8	NC	O	Not used
9	GND	–	Ground
10	X2	O	X'tal (5MHz)
11	X1	I	
12	VDD	–	Power supply (+5V)
13	NC	O	Not used
14	+5V	–	Power supply (+5V)
15	RESET	I	Reset signal input
16	GND	I	Ground
17	NC	O	Not used
18	SCOR	O	Subcode data request signal output
19	NC	O	Not used
20	NC	O	
21, 22	GND	–	Ground
22	RDS-DATA	I	RDS data interrupt input
23	VDD	–	Power supply (+5V)
24	AVDD	–	Power supply (+5V)
25	ADJ	I	CD adjust point port Normal "H"
26	A-SHUT	I	A Deck reel pulse detector
27	B-SHUT	I	B Deck reel pulse detector
28	B-HALF	I	Half detector signal input
29	KEY A	I	Key analog input
30	KEY B	I	
31	AMS	I	Connected to ground
32	CD/VCD	I	CD/VCD select input (Fixed at "L")
33	GND	–	Ground
34	SQ-DATA-IN	I	Subcode Q data clock input
35	CAN'T-USE	–	Not used
36	SQ-CLK	I	Sub code Q data clock input
37 to 45	GND	–	Ground
46	CD-POWER	O	CD power on signal output
47	CD-DATA	O	CD data output
48	CD-CLK	O	CD clock output
49	PBC	O	Not used
50	VCD	O	Not used
51	PBC-OFF	O	Not used
52	DECO1	O	LED ON/OFF control output
53	EXIST2	O	LED ON/OFF control output
54	DISC2	O	LED ON/OFF control output
55	IIC/DATA	I	Serial data input
56	IIC/CLK	I	Serial clock input
57	XRST	O	CD reset signal output
58	XLT	O	CD latch signal output
59	NC	O	Not used

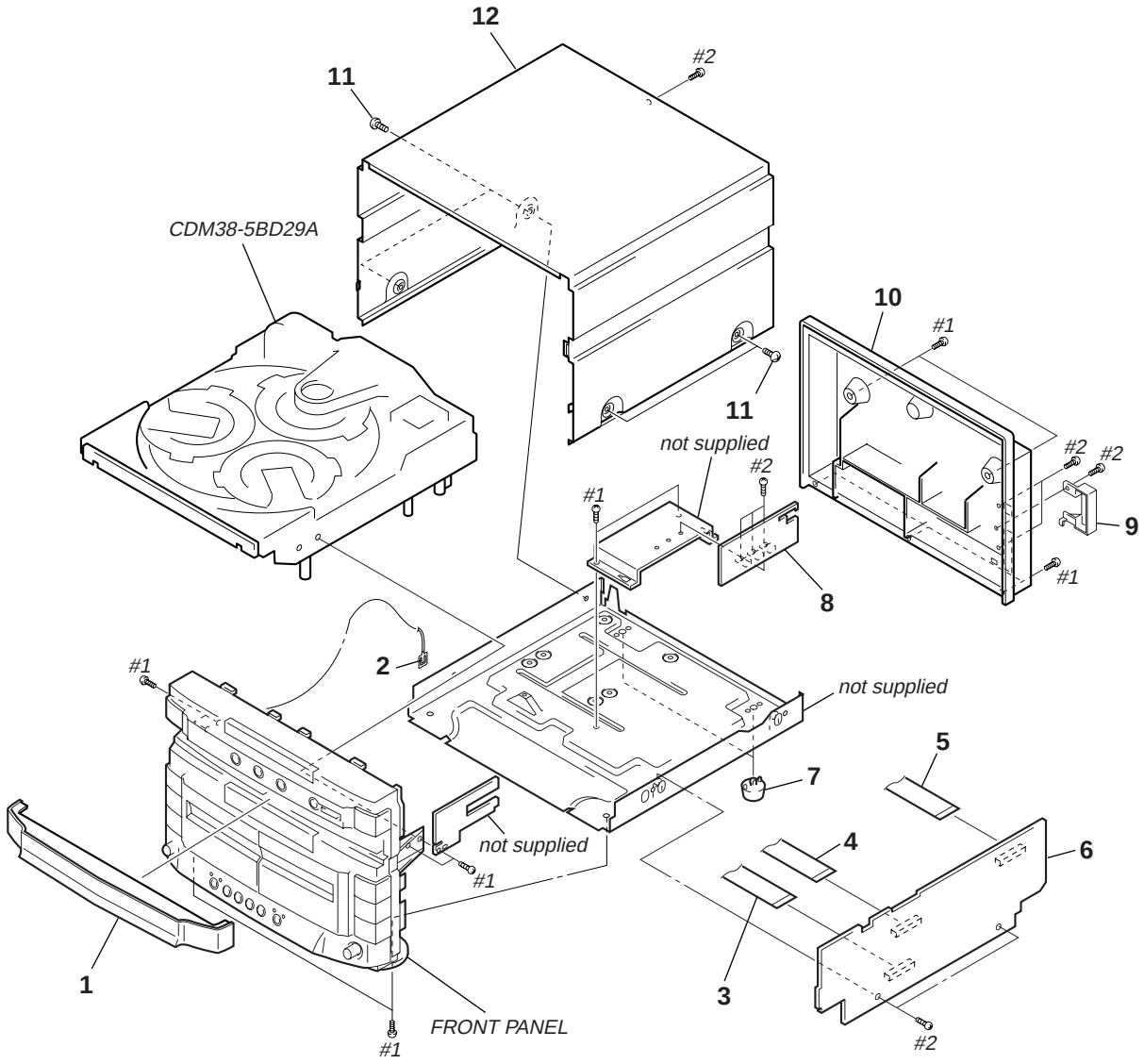
Pin No.	Pin Name	I/O	Function
60	TBL-L	O	Table motor control output
61	TBL-R	O	
62	NC	O	Not used
63	LOAD-OUT	O	Loading motor control signal output
64	LOAD-IN	O	
65	CD-PAUSE	O	LED IN/OFF control output
66	DECO2	O	LED IN/OFF control output
67	CD-PLAY	O	LED IN/OFF control output
68	EXIST3	O	LED IN/OFF control output
69	EXIST1	O	LED IN/OFF control output
70	DISC3	O	LED IN/OFF control output
71	GND	–	Ground
72	DISC1	O	LED IN/OFF control output
73	SENSE2	I	BD Condition signal input
74	SENS	I	
75	DISC-SENS	I	Slit sensor of disc table input
76	T-SENS	I	CD table detection signal input
77	NC	O	Not used
78	ENC 3	I	Disc tray adrress detect encoder input
79	ENC 2	I	
80	ENC 1	I	
81	OPEN	O	Loading out detection signal output
82	CAPM-H/L	O	Capstan motor speed select signal output
83	B-TRG	O	Trigger motor control output
84	A-TRG	O	Trigger motor control output
85	CAPM-EMG (–)	O	Capstan motor control 1 (–) signal output
86	CAPM-ON/OFF (–)	O	Capstan motor control 2 (–) signal output
87	TC-MUTE	O	TC mute ON/OFF selection output
88	REC/CB	O	REC/PB/PASS selection output
89	NR-ON/OFF	O	NR ON/OFF signal output
90	REC-MUTE	O	REC mute ON/OFF selection output
91	NC	O	Not used
92	BIAS	O	Bias ON/OFF signal output
93	NORM/HI	O	Equalizer select output
94	PB-A/B	O	PB Deck A/Deck B select output
95	A-PLAY	I	Deck A play detect
96	B-PLAY	I	Deck B play detect
97	TC-RELAY	O	REC/PB head selection output for IC602
98	A-HALF	I	Deck A cassette detect
99	ALC-ON/OFF	O	ALC ON/OFF output signal
100	CAPM-ON/OFF (+)	O	Capstan motor control 2 (+) signal output

SECTION 7
EXPLODED VIEWS

NOTE:
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

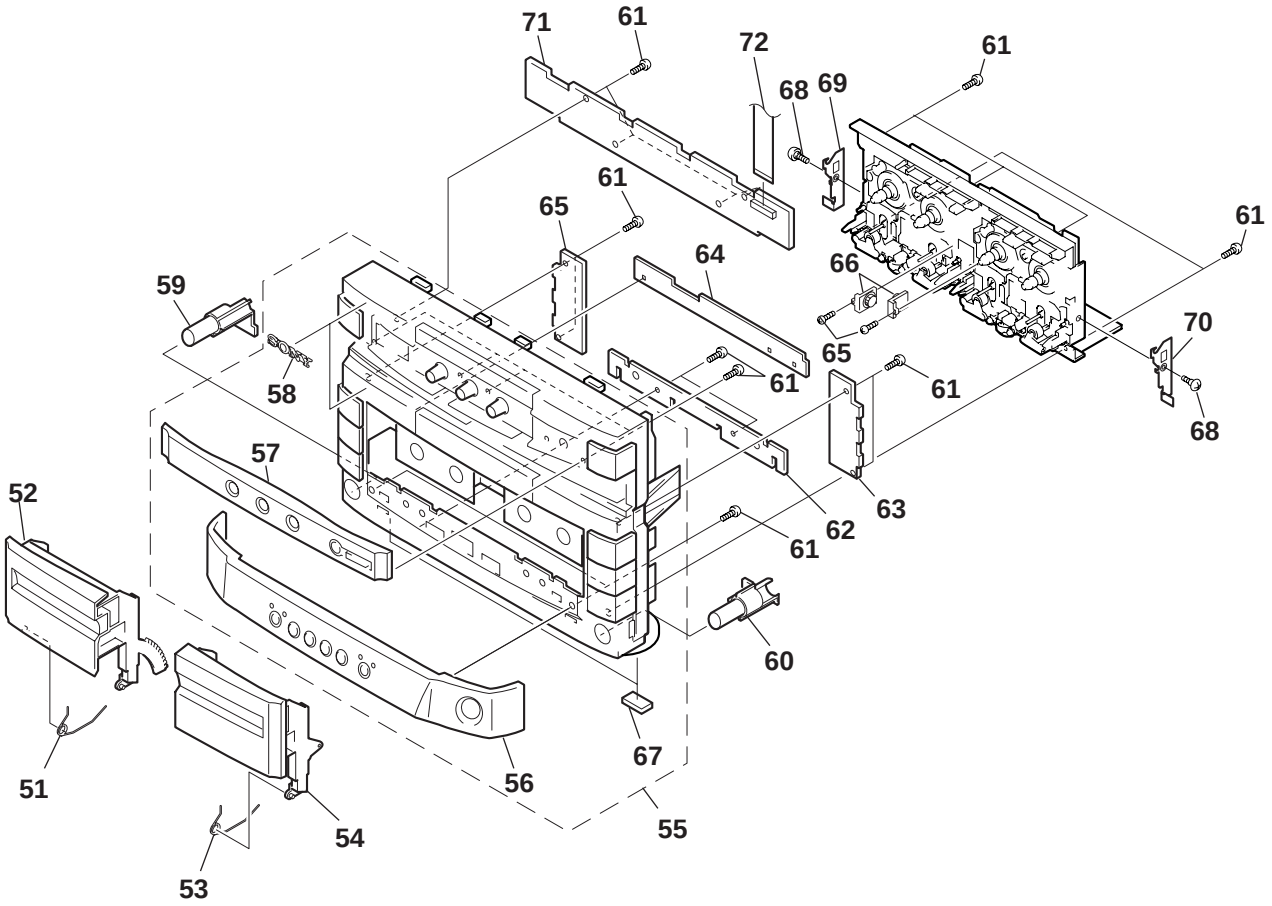
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

7-1. CASE AND BACK PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	4-900-871-01	LOADING PANEL	
2	1-782-152-11	CORD (WITH CONNECTOR)	
3	1-773-012-11	WIRE (FLAT TYPE) (15 CORE)	
4	1-775-173-11	WIRE (FLAT TYPE) (17 CORE)	
5	1-773-114-11	WIRE (FLAT TYPE) (19 CORE)	
* 6	A-4414-231-A	MAIN BOARD, COMPLETE	
7	4-970-381-11	FOOT (REAR)	
* 8	1-669-418-11	REGULATOR BOARD	
9	4-995-189-01	COVER (SC)	
* 10	4-991-349-21	PANEL, BACK	
11	3-363-099-01	SCREW (CASE 3 TP2)	
* 12	4-900-858-21	CASE	

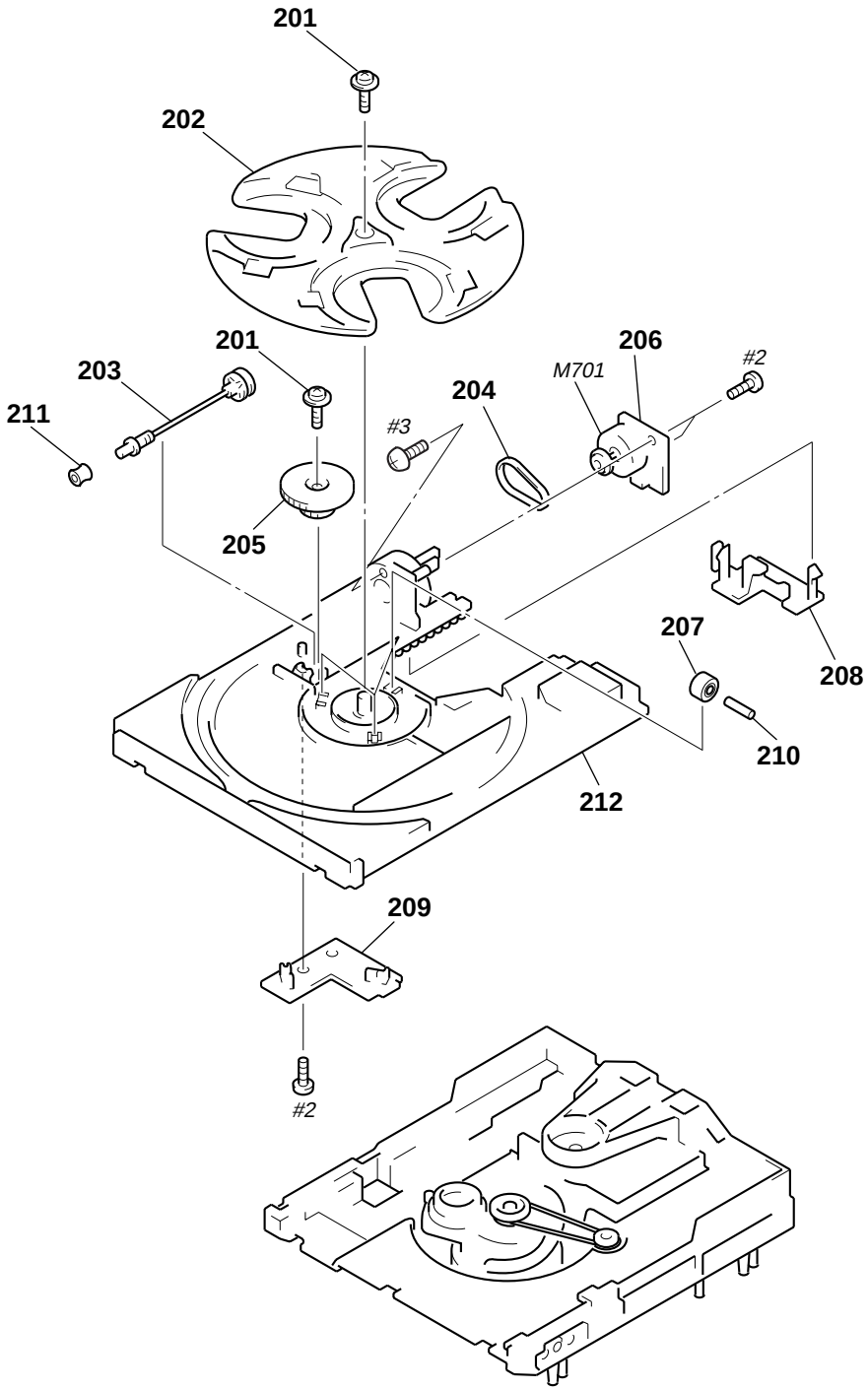
7-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	4-900-890-01	SPRING (L)	
52	X-4950-014-1	CASSETTE HOLDER (A) ASSY	
53	4-900-891-01	SPRING (R)	
54	X-4950-015-1	CASSETTE HOLDER (B) ASSY	
55	X-4950-011-1	FRONT PANEL ASSY	
56	X-4950-013-1	ESCUTCHEON (TC) ASSY	
57	X-4950-012-1	ESCUTCHEON (CD) ASSY	
58	4-962-708-11	EMBLEM (4-A), SONY	
59	4-900-881-01	BUTTON (EJECT A)	
60	4-900-882-01	BUTTON (EJECT B)	
61	4-951-620-01	SCREW (2.6X8), +BVTP	

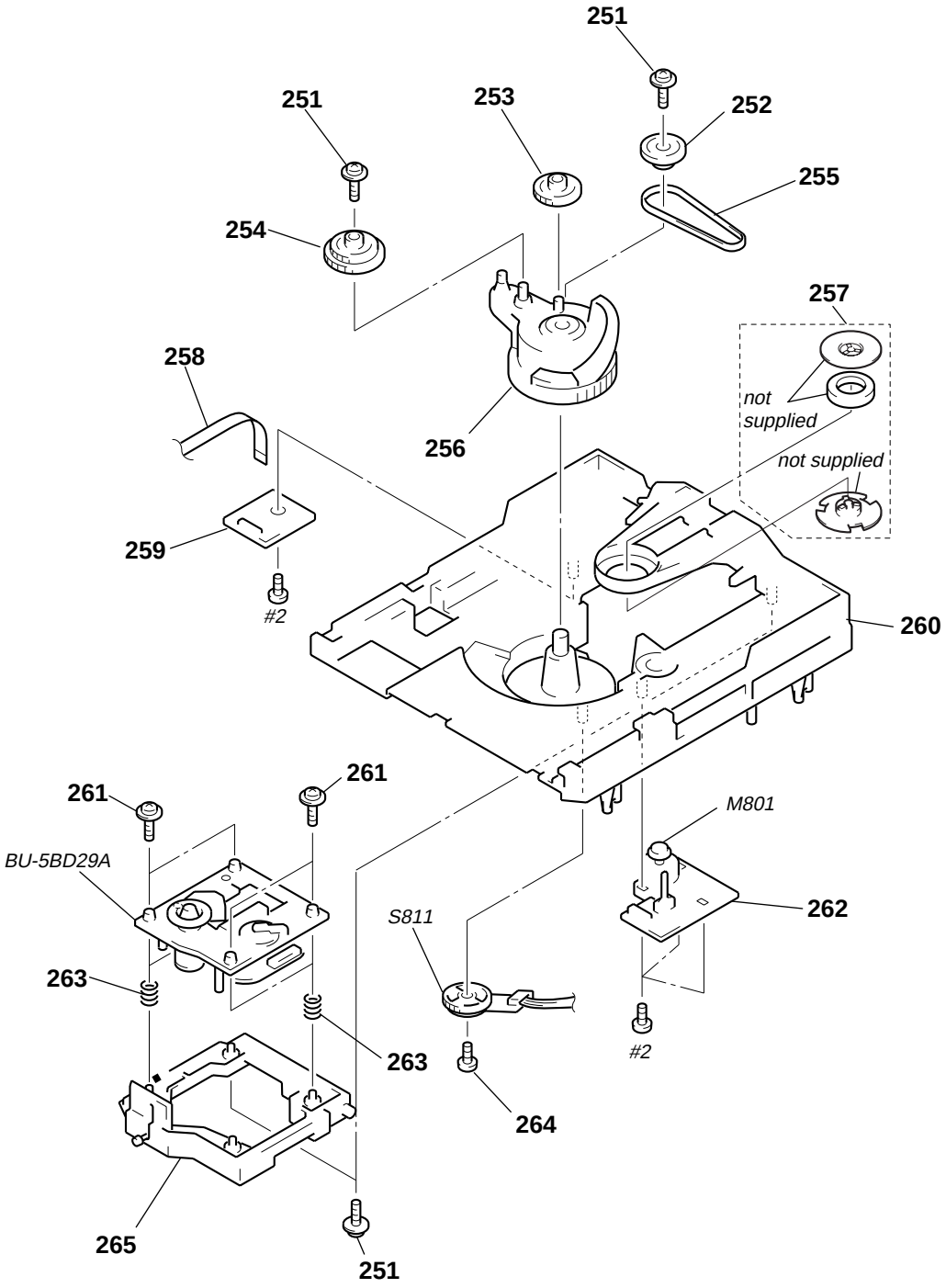
Ref. No.	Part No.	Description	Remark
* 62	1-669-421-11	TC (P) BOARD	
* 63	1-669-423-11	TC (B) BOARD	
* 64	1-669-419-11	TC LED BOARD	
* 65	1-669-422-11	TC (A) BOARD	
66	4-210-045-01	DAMPER	
67	4-977-358-11	CUSHION	
68	3-019-456-01	SCREW STEP	
69	4-900-888-01	EJECT (LEVER-L)	
70	4-900-889-01	EJECT (LEVER-R)	
* 71	1-669-420-11	CD (P) BOARD	
72	1-690-589-31	WIRE (FLAT TYPE) (13 CORE)	

7-3. CD MECHANISM SECTION 1 (CDM38-5BD29A)



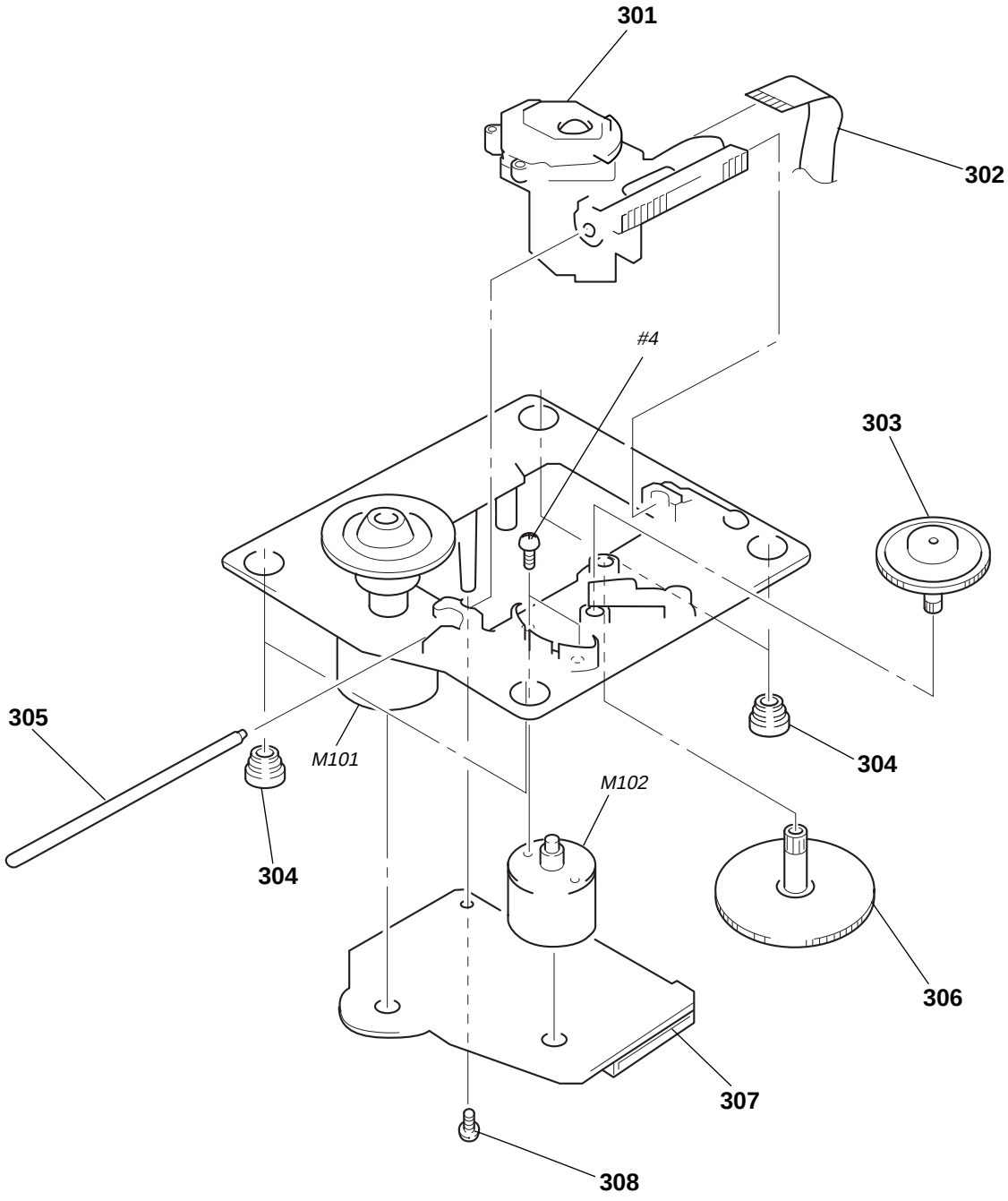
Ref. No.	Part No.	Description	Remark
201	4-981-789-21	BRACKET (2), YOKE	
202	4-977-945-01	TRAY (TURN)	
203	X-4946-665-1	SHAFT ASSY, WORM	
204	4-977-943-01	BELT (TURN) (1.2)	
205	4-977-956-01	WHEEL, WORM	
* 206	1-658-577-11	MOTOR (TURN) BOARD	
207	4-988-162-01	ROLLER	
208	4-977-941-01	BEARING (WORM)	
* 209	1-658-576-11	SENSOR BOARD	
210	4-934-376-01	SHAFT (ROLLER)	
211	4-981-187-01	COLLAR (WORM)	
212	4-977-944-01	TRAY (SLIDE)	
M701	A-4672-004-A	MOTOR ASSY (TURN)	

7-4. CD MECHANISM SECTION 2 (CDM38-5BD29A)



Ref. No.	Part No.	Description	Remark
251	4-981-789-11	BRACKET (2), YOKE	
252	4-977-954-01	PULLEY (SL)	
253	4-977-953-01	GEAR (SL-A)	
254	4-977-955-01	GEAR (SL-B)	
255	4-977-942-01	BELT (SL) (1.4)	
256	X-4946-667-1	CAM ASSY, BU	
257	1-452-879-11	MAGNET	
258	1-776-042-11	WIRE (FLAT TYPE) (8 CORE)	
* 259	1-658-575-11	CONNECTOR BOARD	
* 260	X-4946-668-1	CHASSIS (CDM) ASSY	
261	4-985-672-01	SCREW (+PTPWH M2.6X6), FLOATING	
* 262	1-658-578-11	MOTOR (SLIDE) BOARD	
263	4-982-447-01	SPRING (BU), COMPRESSION	
264	4-951-620-41	SCREW (2.6), +BVTP	
* 265	X-4946-666-1	HOLDER (BU) ASSY	
M801	A-4672-004-A	MOTOR ASSY (SLIDE)	
S811	1-473-335-11	ENCODER, ROTARY (BU, TRAY ADDRESS DET)	

7-5. BASE UNIT SECTION (BU-5BD29A)

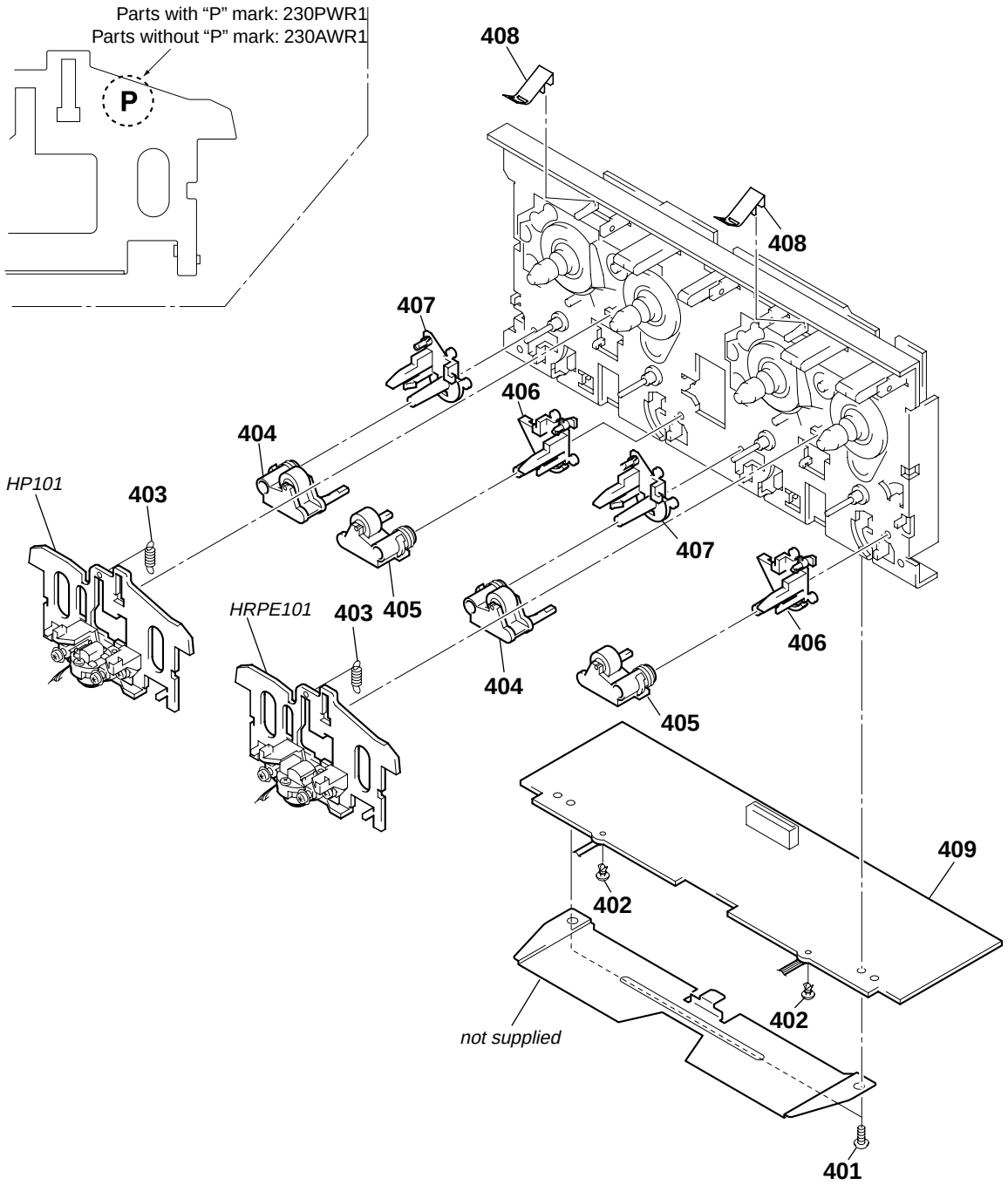


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
⚠301	8-848-379-31	OPTICAL PICK-UP BLOCK KSS-213BA/F-NP	
302	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
303	4-917-567-01	GEAR (M)	
304	4-951-940-01	INSULATOR (BU)	
305	4-917-565-01	SHAFT, SLED	
306	4-917-564-01	GEAR (P), FLATNESS	
* 307	A-4699-522-A	BD BOARD, COMPLETE	
308	4-951-620-01	SCREW (2.6X8), +BVTP	
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	

7-6. TC MECHANISM SECTION 1 (TCM230AWR1)

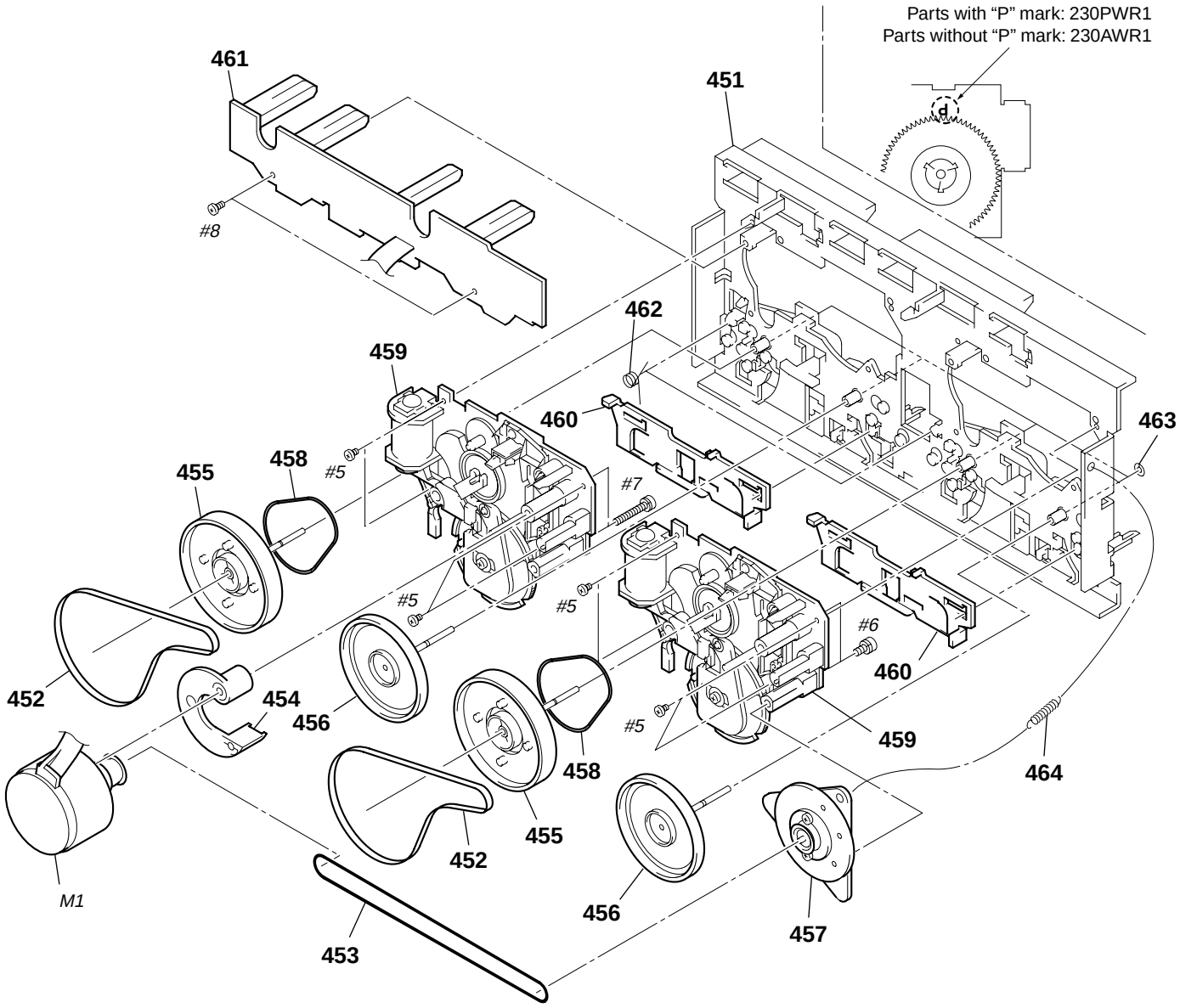
***NOTE:** Two types of parts which are not interchangeable are available for the Head deck (A) ASSY and Head deck (B) ASSY. When replacing the parts, refer to the following figure, and use the appropriate part*



Ref. No.	Part No.	Description	Remark
401	3-376-464-11	SCREW (+PTT 2.6X6), GROUND POINT	
402	3-911-116-21	RIVET, PUSH	
403	3-016-574-01	SPRING (HEAD), TENSION	
404	X-3374-156-1	PINCH LEVER (REV) ASSY	
405	X-3374-155-1	PINCH LEVER (FWD) ASSY	
406	3-016-564-01	BASE (PINCH LEVER FWD)	
407	3-016-565-01	BASE (PINCH LEVER REV)	
408	3-016-567-01	SPRING (CASSETTE), LEAF	
* 409	A-2007-731-A	AUDIO BOARD, COMPLETE	
HP101	A-2056-681-A	DECK (A) ASSY, HEAD (230AWR1)	(*NOTE)
HP101	A-2056-683-A	DECK (A) ASSY, HEAD (230PWR1)	(*NOTE)
HRPE101	A-2056-682-A	DECK (B) ASSY, HEAD (230AWR1)	(*NOTE)
HRPE101	A-2056-684-A	DECK (B) ASSY, HEAD (230PWR1)	(*NOTE)

7-7. TC MECHANISM SECTION 2 (TCM230AWR1)

***NOTE:** Two types of parts which are not interchangeable are available for the mechanical block assembly. When replacing the parts, refer to the following figure, and use the appropriate part.*



Ref. No.	Part No.	Description	Remark
* 451	X-3374-214-1	CASSIS ASSY, MAIN	
452	3-016-570-01	BELT (CAPSTAN)	
453	3-016-569-01	BELT (TENSION)	
454	3-017-360-01	BRACKET (MOTOR)	
455	X-3374-234-1	FLYWHEEL (FWD) ASSY	
456	X-3374-235-1	FLYWHEEL (REV) ASSY	
457	X-3374-238-1	PULLEY ASSY, TENSION	
458	3-024-405-01	BELT (FR)	
459	A-2004-629-A	MECHANICAL BLOCK ASSY (230AWR1)(*NOTE)	

Ref. No.	Part No.	Description	Remark
459	A-2004-630-A	MECHANICAL BLOCK ASSY (230PWR1)(*NOTE)	
460	3-016-566-01	SLIDER, REVERSE	
* 461	A-2007-732-A	LEAF SW BOARD, COMPLETE	
462	3-016-575-01	SPRING, TORSION	
463	3-019-208-01	WASHER, STOPPER	
464	3-027-453-01	SPRING (GROUND), TENSION	
M1	A-2004-628-A	MOTOR ASSY, CAPSTAN	

AUDIO

SECTION 8
ELECTRICAL PARTS LIST

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: µ , for example:
  uA...: µ A..., uPA...: µ PA..., uPB...: µ PB..., uPC...: µ PC..., uPD...: µ PD...
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H
- Abbreviation
  EE : East European model.
  EA3 : Saudi Arabia model.
  EA4 : Israel model.
  AUS : Australian model.
  SP : Singapore model.
  MY : Malaysia model.
  JE : Tourist model
  TW : Taiwan model
  AR : Argentine model
  TH : Thai model.
  CH : Chinese E model.

Ref. No.	Part No.	Description			Remark
*	A-2007-731-A	AUDIO BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C301	1-162-289-31	CERAMIC	390PF	10%	50V
C302	1-126-968-11	ELECT	100uF	20%	6.3V
C303	1-162-282-31	CERAMIC	100PF	10%	50V
C304	1-130-483-00	MYLAR	0.01uF	5%	50V
C305	1-107-715-11	ELECT	22uF	20%	16V
C311	1-162-289-31	CERAMIC	390PF	10%	50V
C313	1-162-282-31	CERAMIC	100PF	10%	50V
C314	1-130-487-00	MYLAR	0.022uF	5%	50V
C315	1-126-233-11	ELECT	22uF	20%	50V
C331	1-137-427-11	FILM	120PF	5%	50V
C332	1-162-288-31	CERAMIC	330PF	10%	50V
C333	1-162-209-31	CERAMIC	27PF	5%	50V
C401	1-162-289-31	CERAMIC	390PF	10%	50V
C402	1-126-968-11	ELECT	100uF	20%	6.3V
C403	1-162-282-31	CERAMIC	100PF	10%	50V
C404	1-130-483-00	MYLAR	0.01uF	5%	50V
C405	1-107-715-11	ELECT	22uF	20%	16V
C411	1-162-289-31	CERAMIC	390PF	10%	50V
C413	1-162-282-31	CERAMIC	100PF	10%	50V
C414	1-130-487-00	MYLAR	0.022uF	5%	50V
C415	1-126-233-11	ELECT	22uF	20%	50V
C431	1-137-427-11	FILM	120PF	5%	50V
C432	1-162-288-31	CERAMIC	330PF	10%	50V
C433	1-162-209-31	CERAMIC	27PF	5%	50V
C601	1-104-396-11	ELECT	10uF	20%	16V
C602	1-104-396-11	ELECT	10uF	20%	16V
C611	1-104-396-11	ELECT	10uF	20%	16V
C612	1-104-396-11	ELECT	10uF	20%	16V
C621	1-137-150-11	FILM	0.01uF	5%	100V
C622	1-126-961-11	ELECT	2.2uF	20%	50V
C623	1-136-155-00	FILM	0.015uF	5%	50V
C624	1-130-481-00	MYLAR	0.0068uF	5%	50V
C625	1-130-481-00	MYLAR	0.0068uF	5%	50V
C627	1-124-903-11	ELECT	1uF	20%	50V
C628	1-136-153-00	FILM	0.01uF	5%	50V
C642	1-104-664-11	ELECT	47uF	20%	16V
		< CONNECTOR >			
CN601	1-695-338-11	PIN, CONNECTOR (PC BOARD) 15P			

Ref. No.	Part No.	Description			Remark
		< HEAD >			
HP101	A-2056-681-A	DECK (A) ASSY, HEAD (PLAY BACK HEAD)			
	7-685-783-09	SCREW +PTT 2X6 (S)			
HRPE101	A-2056-682-A	DECK (B) ASSY, HEAD (RECORD/PLAY BACK/ERASE HEAD)			
	7-685-783-09	SCREW +PTT 2X6 (S)			
		< IC >			
IC601	8-759-111-44	IC UPC4570C-1			
IC602	8-759-143-54	IC UPC1330HA			
IC611	8-759-111-44	IC UPC4570C-1			
		< COIL >			
L331	1-410-780-11	INDUCTOR 27mH			
L431	1-410-780-11	INDUCTOR 27mH			
L601	1-414-193-41	INDUCTOR, MICRO 22uH			
L602	1-414-193-41	INDUCTOR, MICRO 22uH			
		< TRANSISTOR >			
Q621	8-729-142-46	TRANSISTOR 2SC2001-LK			
Q622	8-729-142-46	TRANSISTOR 2SC2001-LK			
Q623	8-729-801-93	TRANSISTOR 2SD1387			
		< RESISTOR >			
R301	1-247-881-00	CARBON	120K	5%	1/4W
R302	1-249-409-11	CARBON	220	5%	1/4W F
R303	1-249-433-11	CARBON	22K	5%	1/4W
R304	1-247-889-00	CARBON	270K	5%	1/4W
R305	1-247-858-11	CARBON	13K	5%	1/4W
R311	1-247-881-00	CARBON	120K	5%	1/4W
R312	1-247-807-31	CARBON	100	5%	1/4W
R314	1-247-882-11	CARBON	130K	5%	1/4W
R315	1-247-850-11	CARBON	6.2K	5%	1/4W
R331	1-249-430-11	CARBON	12K	5%	1/4W
R401	1-247-881-00	CARBON	120K	5%	1/4W
R402	1-249-409-11	CARBON	220	5%	1/4W F
R403	1-249-433-11	CARBON	22K	5%	1/4W
R404	1-247-889-00	CARBON	270K	5%	1/4W
R405	1-247-858-11	CARBON	13K	5%	1/4W
R411	1-247-881-00	CARBON	120K	5%	1/4W
R412	1-247-807-31	CARBON	100	5%	1/4W
R414	1-247-882-11	CARBON	130K	5%	1/4W
R415	1-247-850-11	CARBON	6.2K	5%	1/4W
R431	1-249-430-11	CARBON	12K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R601	1-249-409-11	CARBON	220	5%	1/4W F
R602	1-249-409-11	CARBON	220	5%	1/4W F
R608	1-249-409-11	CARBON	220	5%	1/4W F
R609	1-249-433-11	CARBON	22K	5%	1/4W
R611	1-249-409-11	CARBON	220	5%	1/4W F
R612	1-249-409-11	CARBON	220	5%	1/4W F
⚠R621	1-212-851-00	FUSIBLE	5.6	5%	1/4W F
⚠R622	1-212-851-00	FUSIBLE	5.6	5%	1/4W F
R623	1-249-432-11	CARBON	18K	5%	1/4W
R624	1-249-432-11	CARBON	18K	5%	1/4W
R625	1-249-429-11	CARBON	10K	5%	1/4W
		< VARIABLE RESISTOR >			
RV301	1-238-598-11	RES, ADJ, CARBON 2.2K			
RV311	1-238-598-11	RES, ADJ, CARBON 2.2K			
RV341	1-241-768-11	RES, ADJ, CARBON 220K			
RV401	1-238-598-11	RES, ADJ, CARBON 2.2K			
RV411	1-238-598-11	RES, ADJ, CARBON 2.2K			
RV441	1-241-768-11	RES, ADJ, CARBON 220K			
		< TRANSFORMER >			
T621	1-423-980-11	TRANSFORMER, BIAS OSCILLATION			
**********					
*	A-4699-522-A	BD BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-126-607-11	ELECT CHIP	47uF	20%	4V
C102	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C103	1-164-346-11	CERAMIC CHIP	1uF		16V
C105	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C106	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C107	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C108	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C109	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C110	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C111	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C112	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C113	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C114	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C115	1-126-607-11	ELECT CHIP	47uF	20%	4V
C116	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C117	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C118	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C119	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C120	1-124-779-00	ELECT CHIP	10uF	20%	16V
C121	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C122	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C123	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C124	1-126-607-11	ELECT CHIP	47uF	20%	4V
C125	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C126	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C127	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C128	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C129	1-163-038-91	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remark
C130	1-164-336-11	CERAMIC CHIP	0.33uF		25V
C131	1-164-346-11	CERAMIC CHIP	1uF		16V
C140	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C154	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C161	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C162	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C163	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C164	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C165	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C166	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C167	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C168	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C169	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C170	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C171	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C173	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C174	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C175	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C176	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C177	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C178	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C179	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C181	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C182	1-126-393-11	ELECT CHIP	33uF	20%	10V
C183	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C185	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C188	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C189	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
		< CONNECTOR >			
CNU101	1-770-014-11	CONNECTOR, FFC/FPC 16P			
CNU102	1-778-874-11	CONNECTOR, FFC (LIF (NON-ZIF)) 19P			
		< FERRITE BEAD >			
FB101	1-414-234-11	INDUCTOR CHIP 0UH			
FB103	1-414-234-11	INDUCTOR CHIP 0UH			
		< IC >			
IC101	8-752-080-62	IC CXA1992AR			
IC102	8-759-429-32	IC BA5941FP-E2			
IC103	8-752-380-64	IC CXD2529Q			
		< JUMPER RESISTOR >			
JW101	1-216-295-91	SHORT	0		
JW104	1-216-295-91	SHORT	0		
		< MOTOR >			
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)			
M102	X-4917-504-1	MOTOR ASSY (SLED)			
		< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR MSB710-R			
		< RESISTOR >			
R102	1-216-001-00	METAL CHIP	10	5%	1/10W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

BD **CD (P)**

Ref. No.	Part No.	Description			Remark
R104	1-216-093-00	METAL CHIP	68K	5%	1/10W
R105	1-216-088-00	METAL CHIP	43K	5%	1/10W
R106	1-216-088-00	METAL CHIP	43K	5%	1/10W
R107	1-216-088-00	METAL CHIP	43K	5%	1/10W
R108	1-216-088-00	METAL CHIP	43K	5%	1/10W
R109	1-216-093-00	METAL CHIP	68K	5%	1/10W
R114	1-216-101-00	METAL CHIP	150K	5%	1/10W
R115	1-216-101-00	METAL CHIP	150K	5%	1/10W
R116	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R117	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R118	1-216-063-91	RES, CHIP	3.9K	5%	1/10W
R119	1-216-085-00	METAL CHIP	33K	5%	1/10W
R120	1-216-089-91	RES, CHIP	47K	5%	1/10W
R121	1-216-114-00	RES, CHIP	510K	5%	1/10W
R122	1-216-097-91	RES, CHIP	100K	5%	1/10W
R123	1-216-099-00	METAL CHIP	120K	5%	1/10W
R124	1-216-091-00	METAL CHIP	56K	5%	1/10W
R125	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R126	1-216-063-91	RES, CHIP	3.9K	5%	1/10W
R127	1-216-089-91	RES, CHIP	47K	5%	1/10W
R128	1-216-098-00	METAL CHIP	110K	5%	1/10W
R129	1-216-025-91	RES, CHIP	100	5%	1/10W
R130	1-216-079-00	METAL CHIP	18K	5%	1/10W
R131	1-216-079-00	METAL CHIP	18K	5%	1/10W
R132	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R133	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R134	1-216-065-91	METAL CHIP	4.7K	5%	1/10W
R135	1-216-065-91	METAL CHIP	4.7K	5%	1/10W
R136	1-216-073-00	METAL CHIP	10K	5%	1/10W
R137	1-216-065-91	METAL CHIP	4.7K	5%	1/10W
R138	1-216-025-91	RES, CHIP	100	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R158	1-216-001-00	METAL CHIP	10	5%	1/10W
R159	1-216-121-91	RES, CHIP	1M	5%	1/10W
R161	1-216-097-91	RES, CHIP	100K	5%	1/10W
R162	1-216-073-00	METAL CHIP	10K	5%	1/10W
R163	1-216-121-91	RES, CHIP	1M	5%	1/10W
R164	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R165	1-216-049-91	RES, CHIP	1K	5%	1/10W
R166	1-216-073-00	METAL CHIP	10K	5%	1/10W
R167	1-216-081-00	METAL CHIP	22K	5%	1/10W
R168	1-216-073-00	METAL CHIP	10K	5%	1/10W
R169	1-216-079-00	METAL CHIP	18K	5%	1/10W
R170	1-216-081-00	METAL CHIP	22K	5%	1/10W
R171	1-216-073-00	METAL CHIP	10K	5%	1/10W
R172	1-216-079-00	METAL CHIP	18K	5%	1/10W
R173	1-216-025-91	RES, CHIP	100	5%	1/10W
R174	1-216-033-00	METAL CHIP	220	5%	1/10W
R175	1-216-025-91	RES, CHIP	100	5%	1/10W
R176	1-216-025-91	RES, CHIP	100	5%	1/10W
R177	1-216-025-91	RES, CHIP	100	5%	1/10W
R178	1-216-025-91	RES, CHIP	100	5%	1/10W
R179	1-216-025-91	RES, CHIP	100	5%	1/10W
R180	1-216-025-91	RES, CHIP	100	5%	1/10W
R181	1-216-025-91	RES, CHIP	100	5%	1/10W
R188	1-216-037-00	METAL CHIP	330	5%	1/10W

Ref. No.	Part No.	Description			Remark
R190	1-216-097-91	RES, CHIP	100K	5%	1/10W
R191	1-216-105-91	RES, CHIP	220K	5%	1/10W
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)			
		< VIBRATOR >			
X101	1-767-408-21	VIBRATOR, CRYSTAL (16.9344MHz)			
**********					
*	1-669-420-11	CD (P) BOARD			
		**********			
		< CONNECTOR >			
CNL102	1-568-444-11	SOCKET, CONNECTOR 13P			
		< DIODE >			
D224	8-719-071-42	DIODE SEL5723C-TP15 (○)			
D225	8-719-071-42	DIODE SEL5723C-TP15 (○)			
D226	8-719-071-40	DIODE SMLS79723C-TP15 (DISC NUMBER 1)			
D227	8-719-071-40	DIODE SMLS79723C-TP15 (DISC NUMBER 2)			
D228	8-719-071-40	DIODE SMLS79723C-TP15 (DISC NUMBER 3)			
D229	8-719-071-42	DIODE SEL5723C-TP15 (►)			
D230	8-719-071-41	DIODE SELS5923C-TP15 (▮▮)			
		< TRANSISTOR >			
Q214	8-729-029-21	TRANSISTOR DTA114ESA-TP			
Q215	8-729-029-21	TRANSISTOR DTA114ESA-TP			
Q216	8-729-029-21	TRANSISTOR DTA114ESA-TP			
Q217	8-729-029-21	TRANSISTOR DTA114ESA-TP			
Q218	8-729-029-21	TRANSISTOR DTA114ESA-TP			
Q219	8-729-029-21	TRANSISTOR DTA114ESA-TP			
Q220	8-729-029-21	TRANSISTOR DTA114ESA-TP			
Q221	8-729-029-21	TRANSISTOR DTA114ESA-TP			
Q222	8-729-029-21	TRANSISTOR DTA114ESA-TP			
Q223	8-729-029-21	TRANSISTOR DTA114ESA-TP			
		< RESISTOR >			
R244	1-249-407-11	CARBON	150	5%	1/4W F
R245	1-249-407-11	CARBON	150	5%	1/4W F
R246	1-249-407-11	CARBON	150	5%	1/4W F
R247	1-249-407-11	CARBON	150	5%	1/4W F
R248	1-249-407-11	CARBON	150	5%	1/4W F
R249	1-249-407-11	CARBON	150	5%	1/4W F
R250	1-249-407-11	CARBON	150	5%	1/4W F
R251	1-249-407-11	CARBON	150	5%	1/4W F
R252	1-249-407-11	CARBON	150	5%	1/4W F
R253	1-249-407-11	CARBON	150	5%	1/4W F
R261	1-249-401-11	CARBON	47	5%	1/4W F
R262	1-249-403-11	CARBON	68	5%	1/4W F
R263	1-247-807-31	CARBON	100	5%	1/4W
R264	1-249-407-11	CARBON	150	5%	1/4W F
R265	1-249-407-11	CARBON	150	5%	1/4W F
R266	1-249-409-11	CARBON	220	5%	1/4W F

Ref. No.	Part No.	Description			Remark
		< SWITCH >			
S270	1-762-751-11	SWITCH, TACTILE (▷II)			
S271	1-762-751-11	SWITCH, TACTILE (■)			
S272	1-762-751-11	SWITCH, TACTILE (OPEN/CLOSE ⏏)			
S273	1-762-751-11	SWITCH, TACTILE (DISC 3)			
S274	1-762-751-11	SWITCH, TACTILE (DISC 2)			
S275	1-762-751-11	SWITCH, TACTILE (DISC 1)			
S276	1-762-751-11	SWITCH, TACTILE (DISC SKIP/EX-CHANGE)			
**********					
*	1-658-575-11	CONNECTOR BOARD			
		**********			
		< CONNECTOR >			
* CN701	1-568-946-11	PIN, CONNECTOR 8P			
CN702	1-750-413-11	CONNECTOR, FFC/FPC 8P			
		< TRANSISTOR >			
Q701	8-729-900-80	TRANSISTOR DTC114ES			
		< RESISTOR >			
R703	1-249-435-11	CARBON	33K	5%	1/4W
R704	1-249-429-11	CARBON	10K	5%	1/4W
R705	1-249-417-11	CARBON	1K	5%	1/4W F
**********					
*	A-2007-732-A	LEAF SW BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C1001	1-107-716-11	ELECT	33uF	20%	10V
		< CONNECTOR >			
CN1001	1-568-860-11	SOCKET, CONNECTOR 17P			
CN1001	1-784-459-11	CONNECTOR, FFC/FPC 17P			
		< DIODE >			
D1001	8-719-911-19	DIODE 1SS119-25			
D1002	8-719-911-19	DIODE 1SS119-25			
		< CONNECTOR >			
* DM1001	1-784-581-11	HOLDER, CABLE (2.5MM PITCH) 4P			
		< IC >			
IC1001	8-749-014-38	IC PHOTO INTERRUPTER SG-264			
IC1002	8-749-014-38	IC PHOTO INTERRUPTER SG-264			
		< TRANSISTOR >			
Q1001	8-729-029-56	TRANSISTOR DTA144ESA			
Q1001	8-729-900-65	TRANSISTOR DTA144ES			
		< RESISTOR >			
R907	1-247-879-11	CARBON	100K	5%	1/4W
R1001	1-249-409-11	CARBON	220	5%	1/4W F

Ref. No.	Part No.	Description			Remark
R1002	1-249-409-11	CARBON	220	5%	1/4W F
R1003	1-249-414-11	CARBON	560	5%	1/4W F
R1004	1-247-834-11	CARBON	1.3K	5%	1/4W
R1005	1-247-818-11	CARBON	300	5%	1/4W
R1006	1-247-864-11	CARBON	24K	5%	1/4W
R1007	1-247-856-00	CARBON	11K	5%	1/4W
R1008	1-249-417-11	CARBON	1K	5%	1/4W F
		< VARIABLE RESISTOR >			
RV1001	1-241-785-11	RES, ADJ, CARBON 10K			
RV1002	1-241-785-11	RES, ADJ, CARBON 10K			
		< SWITCH >			
S1001	1-570-953-11	SWITCH, PUSH (1 KEY) (A PLAY)			
S1002	1-570-953-11	SWITCH, PUSH (1 KEY) (B PLAY)			
S1003	1-771-333-11	SWITCH, LEAF (A HALF)			
S1004	1-771-205-11	SWITCH, LEAF (A 120/70)			
S1005	1-771-205-11	SWITCH, LEAF (REC A)			
S1006	1-771-333-11	SWITCH, LEAF (B HALF)			
S1008	1-771-205-11	SWITCH, LEAF (B 120/70)			
S1009	1-771-205-11	SWITCH, LEAF (REC B)			
**********					
*	A-4414-231-A	MAIN BOARD, COMPLETE			
		**********			
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S			
		< CAPACITOR >			
C001	1-164-159-11	CERAMIC	0.1uF		50V
C122	1-162-303-11	CERAMIC	0.0033uF	30%	16V
C128	1-162-306-11	CERAMIC	0.01uF	20%	16V
C129	1-104-665-11	ELECT	100uF	20%	10V
C130	1-162-286-31	CERAMIC	220PF	10%	50V
C131	1-164-159-11	CERAMIC	0.1uF		50V
C132	1-164-159-11	CERAMIC	0.1uF		50V
C133	1-164-159-11	CERAMIC	0.1uF		50V
C134	1-164-159-11	CERAMIC	0.1uF		50V
C135	1-162-284-31	CERAMIC	150PF	10%	50V
C136	1-162-286-31	CERAMIC	220PF	10%	50V
C138	1-104-665-11	ELECT	100uF	20%	10V
C139	1-128-551-11	ELECT	22uF	20%	25V
C140	1-164-159-11	CERAMIC	0.1uF		50V
C301	1-126-960-11	ELECT	1uF	20%	50V
C302	1-130-479-00	MYLAR	0.0047uF	5%	50V
C303	1-136-165-00	FILM	0.1uF	5%	50V
C304	1-136-165-00	FILM	0.1uF	5%	50V
C305	1-126-964-11	ELECT	10uF	20%	50V
C306	1-126-960-11	ELECT	1uF	20%	50V
C307	1-126-959-11	ELECT	0.47uF	20%	50V
C308	1-126-964-11	ELECT	10uF	20%	50V
C309	1-136-173-00	FILM	0.47uF	5%	50V
C310	1-162-290-31	CERAMIC	470PF	10%	50V
C311	1-126-964-11	ELECT	10uF	20%	50V
C312	1-126-959-11	ELECT	0.47uF	20%	50V
C313	1-162-294-31	CERAMIC	0.001uF	10%	50V
C314	1-126-964-11	ELECT	10uF	20%	50V

MAIN

Ref. No.	Part No.	Description				Remark
C315	1-126-963-11	ELECT	4.7uF	20%	50V	
C316	1-104-665-11	ELECT	100uF	20%	10V	
C317	1-104-665-11	ELECT	100uF	20%	10V	
C331	1-164-159-11	CERAMIC	0.1uF		50V	
C332	1-164-159-11	CERAMIC	0.1uF		50V	
C333	1-162-600-11	CERAMIC	0.0047uF	30%	16V	
C334	1-162-600-11	CERAMIC	0.0047uF	30%	16V	
C335	1-162-600-11	CERAMIC	0.0047uF	30%	16V	
C336	1-162-600-11	CERAMIC	0.0047uF	30%	16V	
C351	1-126-960-11	ELECT	1uF	20%	50V	
C352	1-130-479-00	MYLAR	0.0047uF	5%	50V	
C353	1-136-165-00	FILM	0.1uF	5%	50V	
C354	1-136-165-00	FILM	0.1uF	5%	50V	
C355	1-126-964-11	ELECT	10uF	20%	50V	
C356	1-126-960-11	ELECT	1uF	20%	50V	
C357	1-126-959-11	ELECT	0.47uF	20%	50V	
C358	1-126-964-11	ELECT	10uF	20%	50V	
C359	1-136-173-00	FILM	0.47uF	5%	50V	
C360	1-162-290-31	CERAMIC	470PF	10%	50V	
C702	1-126-961-11	ELECT	2.2uF	20%	50V	
C752	1-126-961-11	ELECT	2.2uF	20%	50V	
C813	1-126-967-11	ELECT	47uF	20%	10V	
C853	1-126-944-11	ELECT	3300uF	20%	25V	
C854	1-126-944-11	ELECT	3300uF	20%	25V	
C861	1-126-768-11	ELECT	2200uF	20%	16V	
C862	1-104-665-11	ELECT	100uF	20%	10V	
C863	1-126-929-11	ELECT	4700uF	20%	10V	
C867	1-126-967-11	ELECT	47uF	20%	10V	
C868	1-126-934-11	ELECT	220uF	20%	10V	
C869	1-126-967-11	ELECT	47uF	20%	10V	
C870	1-164-159-11	CERAMIC	0.1uF		50V	
C871	1-164-159-11	CERAMIC	0.1uF		50V	
C872	1-126-967-11	ELECT	47uF	20%	10V	
C873	1-104-665-11	ELECT	100uF	20%	10V	
C876	1-104-665-11	ELECT	100uF	20%	10V	
		< CONNECTOR >				
* CN111	1-568-935-11	PIN, CONNECTOR 8P				
* CN112	1-568-936-11	PIN, CONNECTOR 9P				
* CN113	1-568-935-11	PIN, CONNECTOR 8P				
* CNB108	1-764-017-31	HOUSING, CONNECTOR (PC BOARD) 17P				
CNJ105	1-770-396-11	HOUSING, CONNECTOR (PC BOARD) 3P				
CNP105	1-770-387-11	PIN, CONNECTOR (PC BOARD) 3P				
CNS101	1-569-321-11	SOCKET, CONNECTOR 15P				
CNS102	1-568-443-11	SOCKET, CONNECTOR 13P				
CNS103	1-569-323-11	SOCKET, CONNECTOR 19P				
CNS104	1-568-440-11	SOCKET, CONNECTOR 17P				
		< DIODE >				
D110	8-719-911-19	DIODE 1SS119-25				
D855	8-719-110-08	DIODE RD8.2ES-B2				
D858	8-719-110-08	DIODE RD8.2ES-B2				
D901	8-719-024-99	DIODE 11ES2-NTA2B				
D902	8-719-024-99	DIODE 11ES2-NTA2B				
D903	8-719-024-99	DIODE 11ES2-NTA2B				
D904	8-719-024-99	DIODE 11ES2-NTA2B				

Ref. No.	Part No.	Description				Remark
		< EARTH >				
* EH01	1-537-738-21	TERMINAL, EARTH				
		< IC >				
IC101	8-759-534-07	IC uPD780016AYGF-013-3BA				
IC103	8-759-165-82	IC PST600E-T				
IC107	8-749-921-12	IC GP1F32T (CD OPTICAL DIGITAL OUT)				
IC301	8-759-495-26	IC HA12215				
		< TRANSISTOR >				
Q102	8-729-040-20	TRANSISTOR RT1P137L-TP				
Q103	8-729-029-66	TRANSISTOR DTC114ESA				
Q104	8-729-040-20	TRANSISTOR RT1P137L-TP				
Q331	8-729-116-57	TRANSISTOR 2SB1068-K				
Q332	8-729-029-66	TRANSISTOR DTC114ESA				
Q333	8-729-116-57	TRANSISTOR 2SB1068-K				
Q334	8-729-029-66	TRANSISTOR DTC114ESA				
Q335	8-729-029-66	TRANSISTOR DTC114ESA				
Q336	8-729-116-57	TRANSISTOR 2SB1068-K				
Q337	8-729-144-44	TRANSISTOR 2SD1513-TP-K				
Q338	8-729-029-21	TRANSISTOR DTA114ESA-TP				
Q339	8-729-029-66	TRANSISTOR DTC114ESA				
Q340	8-729-116-57	TRANSISTOR 2SB1068-K				
Q341	8-729-144-44	TRANSISTOR 2SD1513-TP-K				
Q342	8-729-029-21	TRANSISTOR DTA114ESA-TP				
Q343	8-729-029-66	TRANSISTOR DTC114ESA				
Q852	8-729-018-60	TRANSISTOR 2SD2012-LC				
Q855	8-729-018-59	TRANSISTOR 2SB1375(LB SONY)				
		< RESISTOR >				
R122	1-247-807-31	CARBON	100	5%	1/4W	
R123	1-247-807-31	CARBON	100	5%	1/4W	
R124	1-247-807-31	CARBON	100	5%	1/4W	
R125	1-247-807-31	CARBON	100	5%	1/4W	
R126	1-247-807-31	CARBON	100	5%	1/4W	
R127	1-247-807-31	CARBON	100	5%	1/4W	
R128	1-247-807-31	CARBON	100	5%	1/4W	
R129	1-247-807-31	CARBON	100	5%	1/4W	
R130	1-247-807-31	CARBON	100	5%	1/4W	
R131	1-247-807-31	CARBON	100	5%	1/4W	
R132	1-247-807-31	CARBON	100	5%	1/4W	
R133	1-247-807-31	CARBON	100	5%	1/4W	
R134	1-247-807-31	CARBON	100	5%	1/4W	
R135	1-247-807-31	CARBON	100	5%	1/4W	
R136	1-247-807-31	CARBON	100	5%	1/4W	
R139	1-249-429-11	CARBON	10K	5%	1/4W	
R140	1-249-429-11	CARBON	10K	5%	1/4W	
R141	1-249-429-11	CARBON	10K	5%	1/4W	
R142	1-249-429-11	CARBON	10K	5%	1/4W	
R143	1-247-807-31	CARBON	100	5%	1/4W	
R146	1-249-417-11	CARBON	1K	5%	1/4W	F
R147	1-249-429-11	CARBON	10K	5%	1/4W	
R148	1-249-429-11	CARBON	10K	5%	1/4W	
R149	1-247-807-31	CARBON	100	5%	1/4W	
R150	1-247-807-31	CARBON	100	5%	1/4W	
R151	1-247-807-31	CARBON	100	5%	1/4W	

Ref. No.	Part No.	Description			Remark
R152	1-249-429-11	CARBON	10K	5%	1/4W
R153	1-249-419-11	CARBON	1.5K	5%	1/4W F
R154	1-249-419-11	CARBON	1.5K	5%	1/4W F
R155	1-249-426-11	CARBON	5.6K	5%	1/4W
R156	1-249-426-11	CARBON	5.6K	5%	1/4W
R157	1-249-429-11	CARBON	10K	5%	1/4W
R161	1-247-807-31	CARBON	100	5%	1/4W
R162	1-247-807-31	CARBON	100	5%	1/4W
R167	1-249-429-11	CARBON	10K	5%	1/4W
R168	1-247-807-31	CARBON	100	5%	1/4W
R301	1-249-435-11	CARBON	33K	5%	1/4W
R302	1-249-421-11	CARBON	2.2K	5%	1/4W F
R303	1-247-807-31	CARBON	100	5%	1/4W
R304	1-247-807-31	CARBON	100	5%	1/4W
R305	1-249-421-11	CARBON	2.2K	5%	1/4W F
R306	1-249-428-11	CARBON	8.2K	5%	1/4W F
R307	1-249-428-11	CARBON	8.2K	5%	1/4W F
R308	1-249-425-11	CARBON	4.7K	5%	1/4W F
R309	1-249-433-11	CARBON	22K	5%	1/4W
R311	1-247-903-00	CARBON	1M	5%	1/4W
R312	1-247-884-11	CARBON	160K	5%	1/4W
R313	1-249-441-11	CARBON	100K	5%	1/4W
R315	1-249-429-11	CARBON	10K	5%	1/4W
R316	1-249-432-11	CARBON	18K	5%	1/4W
R317	1-249-429-11	CARBON	10K	5%	1/4W
R318	1-249-429-11	CARBON	10K	5%	1/4W
R319	1-247-893-11	CARBON	390K	5%	1/4W
R321	1-249-422-11	CARBON	2.7K	5%	1/4W F
R322	1-249-428-11	CARBON	8.2K	5%	1/4W F
R324	1-247-876-11	CARBON	75K	5%	1/4W
R325	1-247-876-11	CARBON	75K	5%	1/4W
R326	1-249-417-11	CARBON	1K	5%	1/4W F
R327	1-249-437-11	CARBON	47K	5%	1/4W
R328	1-249-425-11	CARBON	4.7K	5%	1/4W F
R329	1-249-437-11	CARBON	47K	5%	1/4W
R330	1-249-425-11	CARBON	4.7K	5%	1/4W F
R331	1-249-437-11	CARBON	47K	5%	1/4W
R332	1-249-415-11	CARBON	680	5%	1/4W F
R333	1-249-421-11	CARBON	2.2K	5%	1/4W F
R334	1-249-415-11	CARBON	680	5%	1/4W F
R335	1-249-421-11	CARBON	2.2K	5%	1/4W F
R336	1-249-437-11	CARBON	47K	5%	1/4W
R337	1-249-417-11	CARBON	1K	5%	1/4W F
R338	1-249-411-11	CARBON	330	5%	1/4W
R339	1-249-437-11	CARBON	47K	5%	1/4W
R340	1-249-437-11	CARBON	47K	5%	1/4W
R341	1-249-417-11	CARBON	1K	5%	1/4W F
R342	1-249-411-11	CARBON	330	5%	1/4W
R343	1-249-437-11	CARBON	47K	5%	1/4W
R351	1-249-435-11	CARBON	33K	5%	1/4W
R352	1-249-421-11	CARBON	2.2K	5%	1/4W F
R353	1-247-807-31	CARBON	100	5%	1/4W
R354	1-247-807-31	CARBON	100	5%	1/4W
R355	1-249-421-11	CARBON	2.2K	5%	1/4W F
R356	1-249-428-11	CARBON	8.2K	5%	1/4W F
R357	1-249-428-11	CARBON	8.2K	5%	1/4W F
R358	1-249-425-11	CARBON	4.7K	5%	1/4W F
R359	1-249-435-11	CARBON	33K	5%	1/4W
R704	1-249-417-11	CARBON	1K	5%	1/4W F
R705	1-249-438-11	CARBON	56K	5%	1/4W
R706	1-249-417-11	CARBON	1K	5%	1/4W F
R754	1-249-417-11	CARBON	1K	5%	1/4W F
R755	1-249-438-11	CARBON	56K	5%	1/4W
R756	1-249-417-11	CARBON	1K	5%	1/4W F
R855	1-249-417-11	CARBON	1K	5%	1/4W F
R859	1-249-417-11	CARBON	1K	5%	1/4W F
⚠R861	1-212-853-00	FUSIBLE	6.8	5%	1/4W F
⚠R862	1-212-853-00	FUSIBLE	6.8	5%	1/4W F
		< VARIABLE RESISTOR >			
RV301	1-238-600-11	RES, ADJ, CARBON 10K			
RV351	1-238-600-11	RES, ADJ, CARBON 10K			
		< SWITCH >			
S251	1-762-751-11	SWITCH, TACTILE (▷ (DECK B))			
S252	1-762-751-11	SWITCH, TACTILE (◁ (DECK B))			
S253	1-762-751-11	SWITCH, TACTILE (■ (DECK B))			
		< VIBRATOR >			
X101	1-760-489-11	VIBRATOR, CERAMIC (5MHz)			
**********					
*	1-658-578-11	MOTOR (SLIDE) BOARD			
		**********			
		< CAPACITOR >			
C801	1-162-306-11	CERAMIC	0.01uF	20%	16V
C804	1-162-306-11	CERAMIC	0.01uF	20%	16V
C805	1-126-964-11	ELECT	10uF	20%	50V
		< CONNECTOR >			
* CN801	1-568-947-11	PIN, CONNECTOR 9P			
		< DIODE >			
D801	8-719-921-48	DIODE MTZJ-5.6C			
D804	8-719-911-19	DIODE 1SS119-25			
D805	8-719-911-19	DIODE 1SS119-25			
		< IC >			
IC801	8-759-274-09	IC BA6286N			
		< RESISTOR >			
R801	1-249-401-11	CARBON	47	5%	1/4W F
		< SWITCH >			
S801	1-762-527-11	SWITCH, ROTARY			
**********					

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MOTOR (TURN) **REGULATOR** **SENSOR** **TC(A)** **TC(B)** **TC(P)** **TC LED**

Ref. No.	Part No.	Description			Remark
*	1-658-577-11	MOTOR (TURN) BOARD			
		**********			
		< CAPACITOR >			
C701	1-162-306-11	CERAMIC	0.01uF	20%	16V
C702	1-126-964-11	ELECT	10uF	20%	50V
C705	1-162-306-11	CERAMIC	0.01uF	20%	16V
		< CONNECTOR >			
CN703	1-750-413-11	CONNECTOR, FFC/FPC 8P			
CN704	1-506-469-11	PIN, CONNECTOR 4P			
		< DIODE >			
D701	8-719-983-66	DIODE MTZJ-T-72-3.6B			
		< IC >			
IC701	8-759-633-65	IC M54641L			
		< RESISTOR >			
R706	1-249-411-11	CARBON	330	5%	1/4W
R707	1-249-401-11	CARBON	47	5%	1/4W F

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*	1-669-418-11	REGULATOR BOARD			
		**********			
		< CAPACITOR >			
C850	1-164-159-11	CERAMIC	0.1uF		50V
C851	1-164-159-11	CERAMIC	0.1uF		50V
C852	1-164-159-11	CERAMIC	0.1uF		50V
C865	1-126-967-11	ELECT	47uF	20%	10V
C866	1-126-967-11	ELECT	47uF	20%	10V
		< DIODE >			
D851	8-719-911-19	DIODE 1SS119-25			
D852	8-719-911-19	DIODE 1SS119-25			
		< IC >			
IC851	8-759-231-58	IC TA7812S			
IC852	8-759-231-53	IC TA7805S			
IC853	8-759-604-86	IC M5F7807L			

****

*	1-658-576-11	SENSOR BOARD			
		**********			
		< IC >			
IC702	8-749-924-18	IC PHOTO INTERRUPTER RPI-1391			
IC703	8-749-924-30	IC PHOTO REFLECTOR GP2S28			
		< RESISTOR >			
R701	1-249-416-11	CARBON	820	5%	1/4W F
R702	1-249-407-11	CARBON	150	5%	1/4W F

****

Ref. No.	Part No.	Description			Remark
*	1-669-422-11	TC (A) BOARD			
		**********			
		< RESISTOR >			
R209	1-249-415-11	CARBON	680	5%	1/4W F
R210	1-249-417-11	CARBON	1K	5%	1/4W F
R211	1-249-419-11	CARBON	1.5K	5%	1/4W F
		< SWITCH >			
S260	1-762-751-11	SWITCH, TACTILE (■ (DECK A))			
S261	1-762-751-11	SWITCH, TACTILE (◁ (DECK A))			
S262	1-762-751-11	SWITCH, TACTILE (▷ (DECK A))			

****

*	1-669-423-11	TC (B) BOARD			
		**********			
		< RESISTOR >			
R201	1-249-401-11	CARBON	47	5%	1/4W F
R202	1-249-403-11	CARBON	68	5%	1/4W F
		< SWITCH >			
S251	1-762-751-11	SWITCH, TACTILE (▷ (DECK B))			
S252	1-762-751-11	SWITCH, TACTILE (◁ (DECK B))			
S253	1-762-751-11	SWITCH, TACTILE (■ (DECK B))			

****

*	1-669-421-11	TC (P) BOARD			
		**********			
		< RESISTOR >			
R203	1-247-807-31	CARBON	100	5%	1/4W
R204	1-249-407-11	CARBON	150	5%	1/4W F
R205	1-249-407-11	CARBON	150	5%	1/4W F
R206	1-249-409-11	CARBON	220	5%	1/4W F
R207	1-249-411-11	CARBON	330	5%	1/4W
R208	1-249-413-11	CARBON	470	5%	1/4W F
		< SWITCH >			
S254	1-762-751-11	SWITCH, TACTILE (DIRECTION MODE)			
S255	1-762-751-11	SWITCH, TACTILE (❚❚ PAUSE)			
S256	1-762-751-11	SWITCH, TACTILE (● REC)			
S257	1-762-751-11	SWITCH, TACTILE (HI-SPEED DUBBING)			
S258	1-762-751-11	SWITCH, TACTILE (CD SYNCHRO)			
S259	1-762-751-11	SWITCH, TACTILE (DOLBY NR)			

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*	1-669-419-11	TC LED BOARD			
		**********			
		< DIODE >			
D201	8-719-071-42	DIODE SEL5723C-TP15 (► (DECK B))			
D202	8-719-071-42	DIODE SEL5723C-TP15 (◄ (DECK B))			
D203	8-719-071-41	DIODE SELS5923C-TP15 (❚❚)			
D204	8-719-071-44	DIODE SELS5223C-TP15 (●)			
D205	8-719-071-42	DIODE SEL5723C-TP15 (► (DECK A))			

Ref. No.	Part No.	Description				Remark
D206	8-719-071-42	DIODE SEL5723C-TP15 (◄ (DECK A))				
		< TRANSISTOR >				
Q201	8-729-029-21	TRANSISTOR DTA114ESA-TP				
Q202	8-729-029-21	TRANSISTOR DTA114ESA-TP				
Q203	8-729-029-21	TRANSISTOR DTA114ESA-TP				
Q204	8-729-029-21	TRANSISTOR DTA114ESA-TP				
Q205	8-729-029-21	TRANSISTOR DTA114ESA-TP				
Q206	8-729-029-21	TRANSISTOR DTA114ESA-TP				
		< RESISTOR >				
R221	1-249-407-11	CARBON	150	5%	1/4W	F
R222	1-249-407-11	CARBON	150	5%	1/4W	F
R223	1-249-407-11	CARBON	150	5%	1/4W	F
R224	1-249-407-11	CARBON	150	5%	1/4W	F
R225	1-249-407-11	CARBON	150	5%	1/4W	F
R226	1-249-407-11	CARBON	150	5%	1/4W	F

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MISCELLANEOUS
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2	1-782-152-11	CORD (WITH CONNECTOR)
3	1-773-012-11	WIRE (FLAT TYPE) (15 CORE)
4	1-775-173-11	WIRE (FLAT TYPE) (17 CORE)
5	1-773-114-11	WIRE (FLAT TYPE) (19 CORE)
72	1-690-589-31	WIRE (FLAT TYPE) (13 CORE)
257	1-452-879-11	MAGNET
258	1-776-042-11	WIRE (FLAT TYPE) (8CORE)
HP101	A-2056-681-A	DECK (A) ASSY, HEAD (230AWR1)
HP101	A-2056-683-A	DECK (A) ASSY, HEAD (230PWR1)
HRPE101	A-2056-682-A	DECK (B) ASSY, HEAD (230AWR1)
HRPE101	A-2056-684-A	DECK (B) ASSY, HEAD (230PWR1)
M1	A-2004-628-A	MOTOR ASSY, CAPSTAN
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)
M102	X-4917-504-1	MOTOR ASSY (SLED)
M701	A-4672-004-A	MOTOR ASSY (TURN)
M801	A-4672-004-A	MOTOR ASSY (SLIDE)
S811	1-473-335-11	ENCODER,ROTARY (BU,TRAY ADDRESS DET)

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HARDWARE LIST
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#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S
#2	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#3	7-621-775-10	SCREW +B 2.6X4
#4	7-621-255-15	SCREW +P 2X3
#5	7-685-850-04	SCREW +BVTT 2X3 (S)
#6	7-628-254-15	SCREW +PS 2.6X6
#7	7-628-254-50	SCREW +PS 2.6X16
#8	7-685-851-04	SCREW +BVTT 2X4 (S)

9-922-906-11

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